Dominion –Power Generation Engineering

Scope of Work Description for Temporary Pumping System

Possum Point Ash Pond "C"

Issued for cost estimate May 7, 2014

Purpose:

Rainwater collected in the "C" ash pond will be pumped out of the existing outlet box to the "E" ash pond using electric-driven pumps.

Pump Configuration:

- Concrete outlet box outfall pipe (30-inch) will be plugged. Bottom of outlet box will be cleaned out to serve as a sump for a floor-mounted submersible pump.
- one 400-gpm submersible pump for normal rainwater removal
- one 3500-gpm self-priming pump for emergency use
- Pump control is from new hi/lo level switches
- Pump operation (normal vs emergency) will be selected manually
- See attached quote from Godwin Pumps (aka Xylem)

Power Supply for Pumps

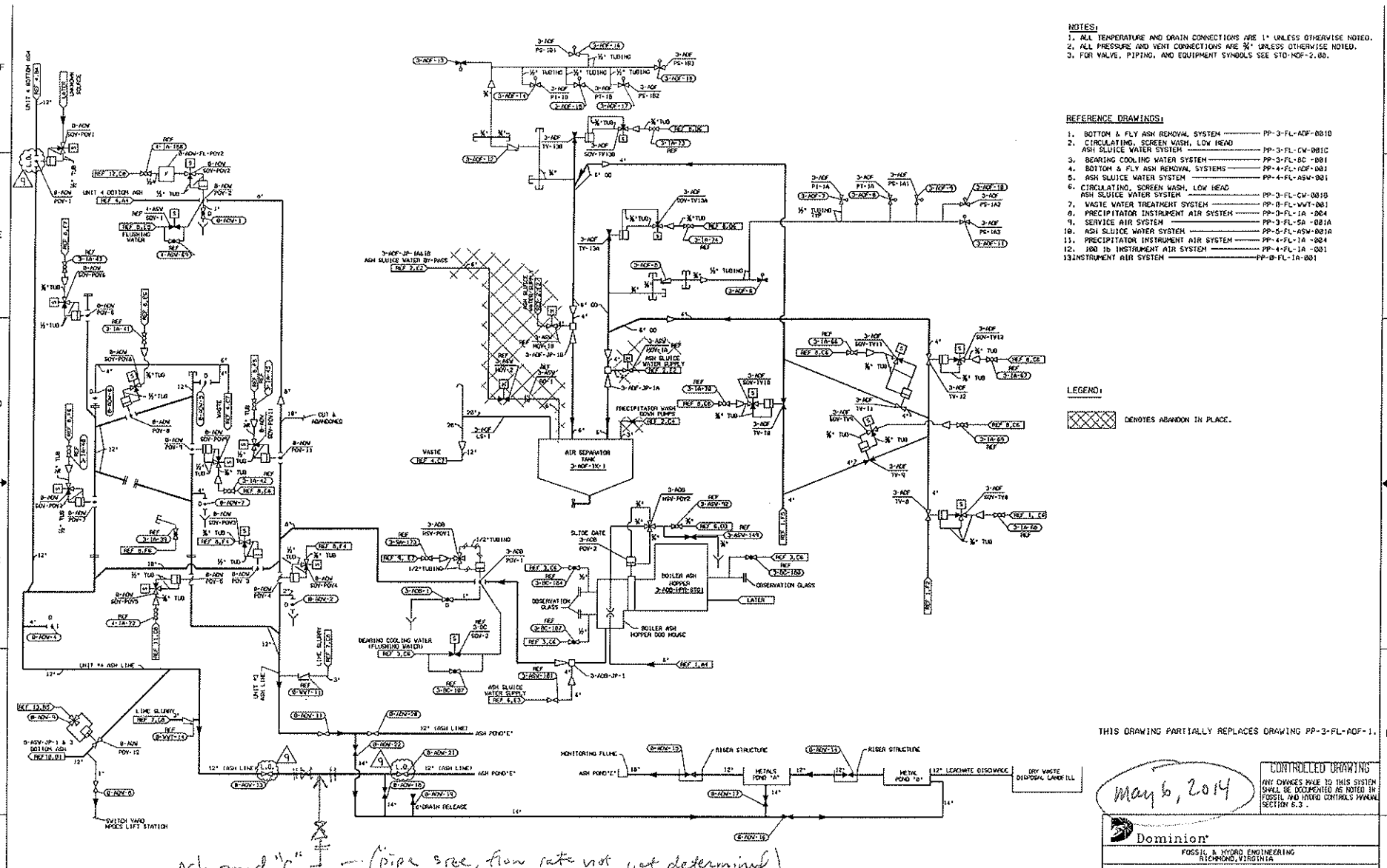
- 3-phase 480 VAC will come from station. Approx 2000 yards, in conduit along existing ash line timber supports. Design will be by Possum Point personnel, installation by contractor.
- See Dave Gibson e-mail dated May 5, 2014.
- Breakers and isolation for pumps will be provided by pump supplier.
- Float switch controls for pump on/off operation will be provided by pump supplier.

Pump Discharge Piping

- Approx 700 feet of 12-inch HDPE rated for 100 psig, run along ground, staked every 10 ft. Tie in using bolted flange to new spool piece at Unit 3 ash line.
- Fabricate a 20-foot spool piece with 14-inch ASME flanges, with one 14-inch slide gate valve and one 12-inch slide gate valve. Pipe material is STD WT carbon steel; install in existing Unit 3 ash pipe.
- Unit 3 ash line from new spool piece to "E" ash pond will have to be filled and pressurized to check for leaks.
- See attached sketches

Attachments

1. Site Plan dwg no PP-0-SP-STA-006 dated May 6, 2014
2. Details – Ash Pond Outlet Box dwg no 8953-FC-51 dated May 6, 2014
3. Flow Diagram dwg no PP-3-FL-ADF-001A dated May 6, 2014
4. Proposed Pumping System sketch dated May 6, 2014
5. Godwin Pumps quote



THIS DRAWING PARTIALLY REPLACES DRAWING PP-3-FL-ADF-1.

May 6, 2014

CONTROLLED DRAWING
ANY CHANGES MADE TO THIS SYSTEM SHALL BE DOCUMENTED AS NOTED IN FOSSIL AND HYDRO CONTROLS MANUAL SECTION 6.3.

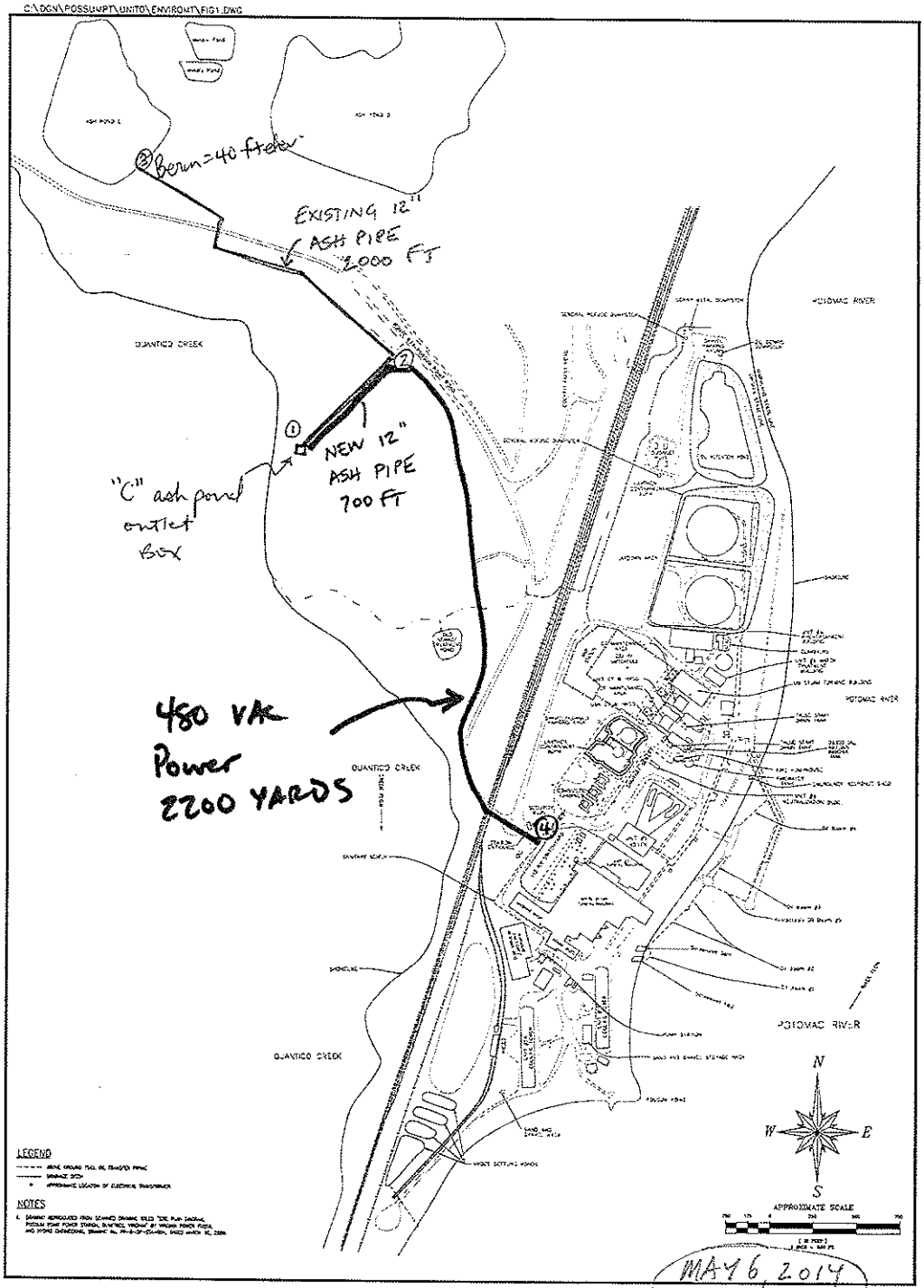
Dominion

FOSSIL & HYDRO ENGINEERING
RICHMOND, VIRGINIA

FLOW & VALVE OPERATING DIAGRAM
BOTTOM & FLY ASH REMOVAL SYSTEM
POSSUM POINT POWER STATION
VIRGINIA POWER

DSGN	DSGN SUPV JVB	18-MAR-2013	
DRWN DTV	DRFT SUPV	DRAWING NO.	REV.
CHKD RLV	LEAD ENGR	PP-3-FL-ADF-001A	9
	SCALE NONE	UNLESS OTHERWISE NOTED	SH OF

5 REVISED TO INCORPORATE DRR 55836829.
4 REVISED TO INCORPORATE DRR 55830737.
9 REVISED PER JP PUMP REMOVAL & RESTRICTING LINE INSTALLATION.
8 AS-BUILT PER PROJECT PP5843.1 AND STATION COMMENTS
7 REVISED TO ADD TV-8 FOR DRAWING CONTINUITY PER AS-BUILT PROJECT PP5827.
6 REVISED TO INCORPORATE AS-BUILT CONDITIONS PER IR # 60350.



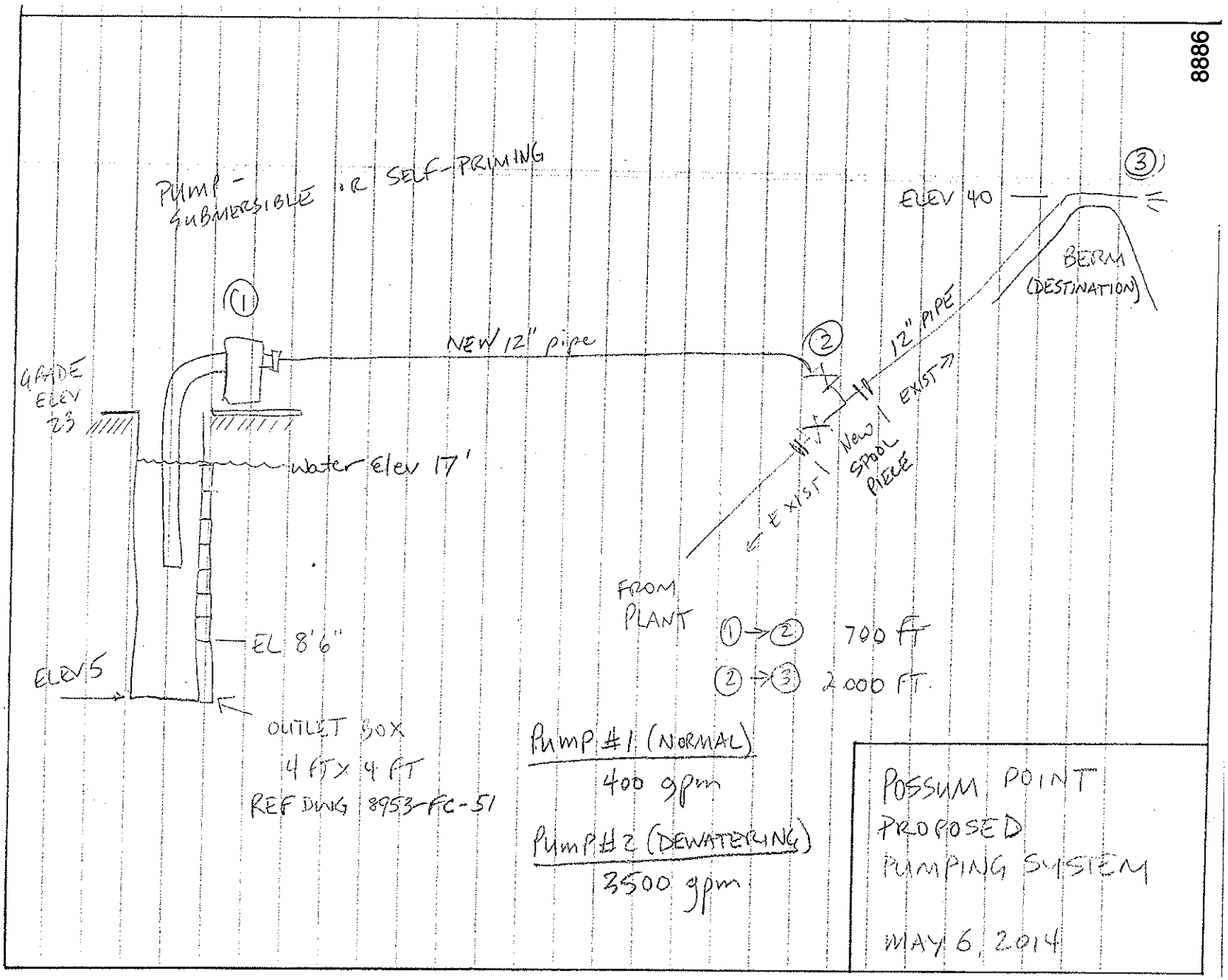
THIS DWG. VOIDED & SUPERSEDED BY 600 SERIES DRAWING.

DOMINION ENERGY

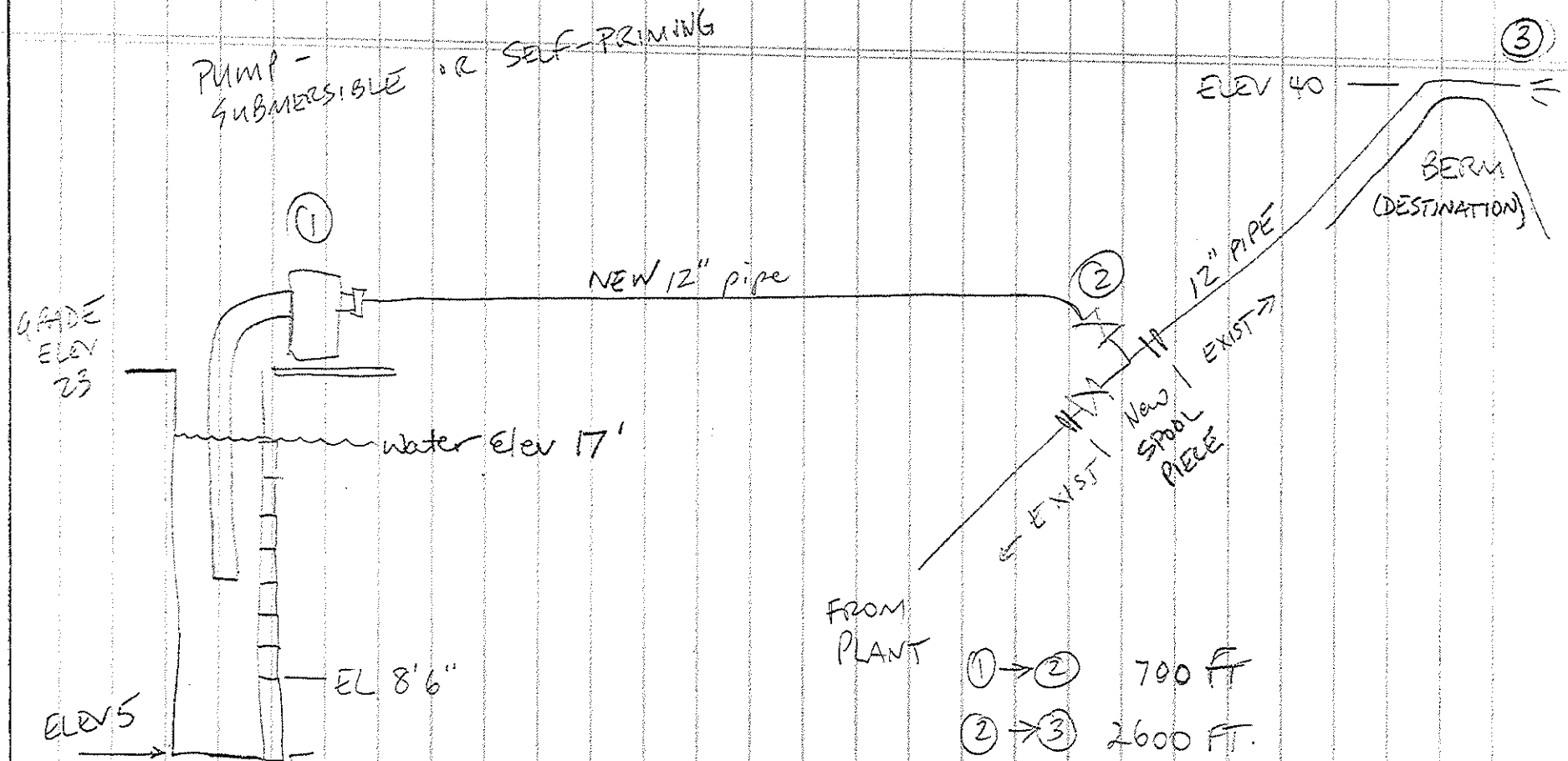
SITE PLAN
BASE MAP
POSSUM POINT POWER STATION

1	VOIDED BY ENVIRONMENTAL RELEASE.	0	ORIGINAL ISSUE	DRAWING NUMBER	REV
				PP-0-SP-STA-006	1
				SCALE N/A	SH 1 OF 1

PLAN
SECTION 'A'
DETAILS - ASH POND OUTLET BOX
VIRGINIA ELECTRIC & POWER CO
8858-FC-91
May 9, 2014


PUMP - SUBMERSIBLE OR SELF-PRIMING
ELEV 40
3
BERM (DESTINATION)
1
NEW 12" pipe
2
12" PIPE
EXIST
GRADE ELEV 23
water elev 17'
NEW SPOOL PIECE
EXIST
FROM PLANT
EL 8'6"
ELEV 5
OUTLET BOX 4 FT X 4 FT
REF DWG 8953-FC-51
1 → 2 700 FT
2 → 3 2,000 FT.
Pump #1 (NORMAL)
400 gpm
Pump #2 (DEWATERING)
3500 gpm
POSSUM POINT
PROPOSED
PUMPING SYSTEM
MAY 6, 2014

8887



POSSUM POINT
PROPOSED
PUMPING SYSTEM

MAY 5, 2014

Possum Point Ash Pond ABC - Events

- March 2014
  - Identified Ash Pond ABC- outfall discharge, crest erosion, crest low areas, regulatory req'mt.
- April 2014
  - Initiated topographic survey of the dam and watershed for use in stability and hydrologic analyses.
  - Evaluated options to divert water toward outfall and away from erosion and low areas
- May 2014
  - Developed engineering options to stop all flow from ABC (not implemented)
- June 2014
  - Sandbagged the low areas of ABC dam
  - Submitted O&M Certificate application to VA DCR.
  - Initiated dam integrity analysis- Hydraulic and Hydrologic analysis, spillway capacity
  - Evaluated diversion of storm water away from Pond ABC (not implemented).
- July 2014
  - Performed dam stability borings- material, density testing.
  - Received Conditional O&M Certificate from VA DCR.
- September 2014
  - Received SELC Notice of Intent to Sue
- December 2014
  - Completed stability analysis. Slopes are stable in the current configuration.
  - Completed Dam Break Analysis and Inundation Mapping
- January 2015
  - Decision made to close all ponds
  - Developed strategy and initiated closure engineering
  - Completed drawings for Dike Repairs/Tree Removal. To be implemented with pond closure.
- Ongoing- Weekly inspections

8888

Possum Point Ash Pond ABC – DCR Status

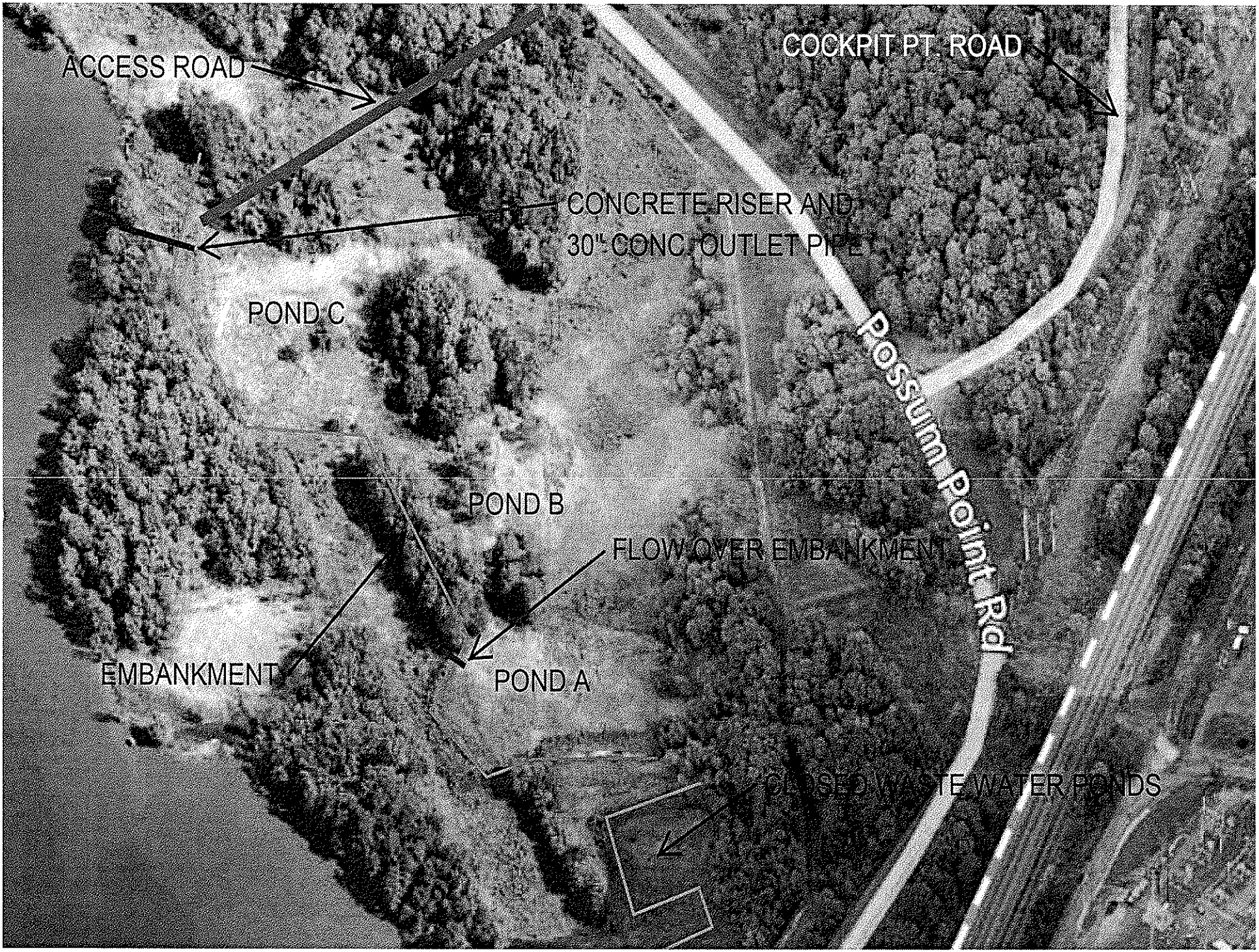
- **VA DCR Conditional O&M Certificate – Issued July 2014**
  - Dam breach/inundation study by April 2016 – Complete
  - Spillway design flood study by December 2015 – Complete
  - Correct crest erosion/settlement at Ponds A&B by April 2016 - Sandbagging/rock-fill placement Summer 2014; permanent repairs with pond closure
  - Remove trees and vegetation from slopes by April 2016 – Included in pond closure scope
- **Stability Analyses – December 2014**
  - Slopes stable in current configuration – No modification required
- **Drawings for Dike Repairs/Tree Removal – January 2015**
  - Design complete – Implementation with pond closure
- **Emergency Action Plan- April 2016**
  - Plan to complete- July 2015
- **Inspections**
  - Weekly by Station ECC and copies to PGE
  - Annually by PGE and copies to DCR

8889

Agency Communications

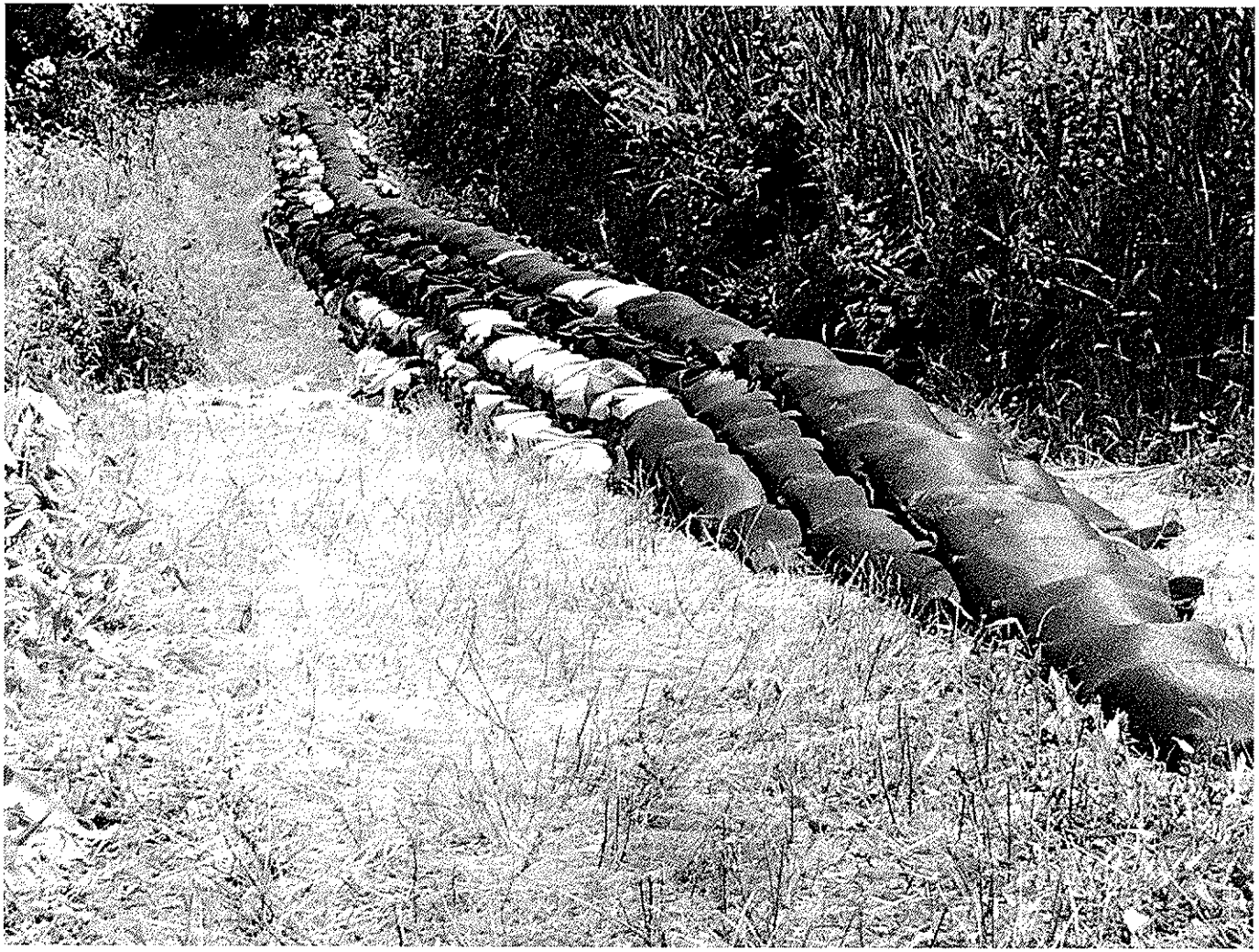
- April 11, 2014- Met w/DEQ at Possum Point ABC Pond area
- April 2014- Notified DCR of impoundment status (Registration)
- May 2014- Met with DEQ Piedmont Regional Office
- June 2014- Submitted O&M Certificate application to VA DCR
- July 2014- Received Conditional O&M Certificate from VA DCR
- Spring 2015-
  - Discussions with Northern Regional DEQ Office- Preliminary plans and permitting
  - Discussions with US Fish & Wildlife about requirements for eagle disturbance
  - Submittal to Game & Inland Fisheries regarding dredging plans for E to D
  - Discussions with Prince William County about need to build haul road- E to D
- March 30, 2015- Letter to DEQ describing preliminary plans based on pre-publication of the rule

Appendix


ACCESS ROAD
COCKPIT PT. ROAD
CONCRETE RISER AND
30" CONC. OUTLET PIPE
POND C
Possum Point Rd
POND B
FLOW OVER EMBANKMENT
EMBANKMENT
POND A
CLOSED WASTE WATER PONDS

8892

Possum Point Pond A



8893

Possum Point Pond B

Possum Point Pond C

05/09/2014 10:16

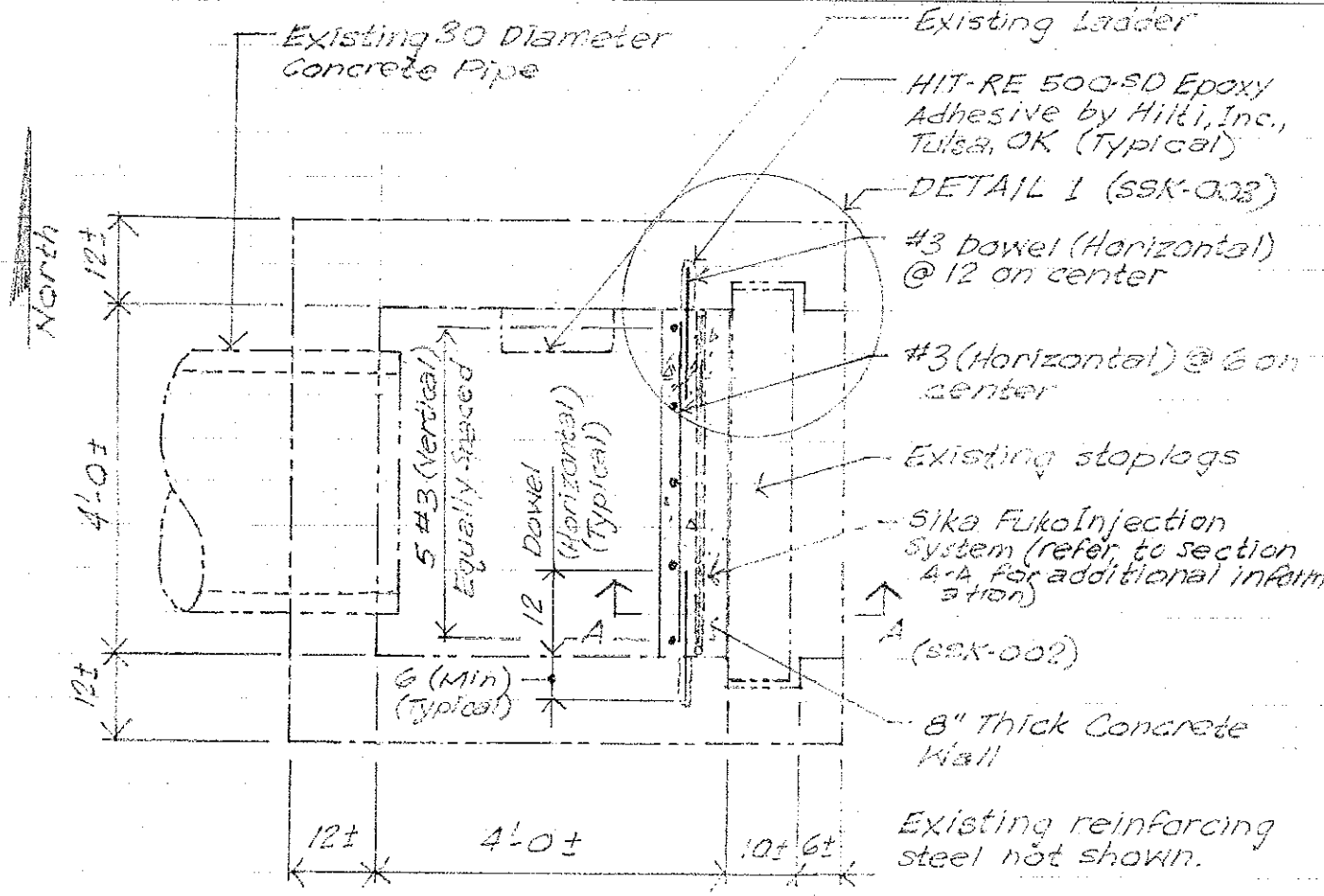
Pond A Seep

Pond B Seep

Dominion®

Engineering Work Sheet – Fossil & Hydro

Project Possum Point Ash Pond 2 Outlet Box Stop Log Sealing	Document Type ☐ Calculation ☑ Sketch ☐ Other	Sheet No. — of —
	Doc. No. PP-ckc04162015-SSK-002	Rev. No. 0 (Issued for Construction)
Subject Plan at Existing Ash Pond Outlet Box	Prepared By C. Cole	Date 4-16-2015
System —	Checked By —	Date —



PLAN AT EXISTING ASH POND OUTLET BOX

SCALE: 1/2" = 1'-0 All dimensions are in feet unless noted.

Reference: Stone & Webster Engineering Corporation drawing no. 8958-FC-51

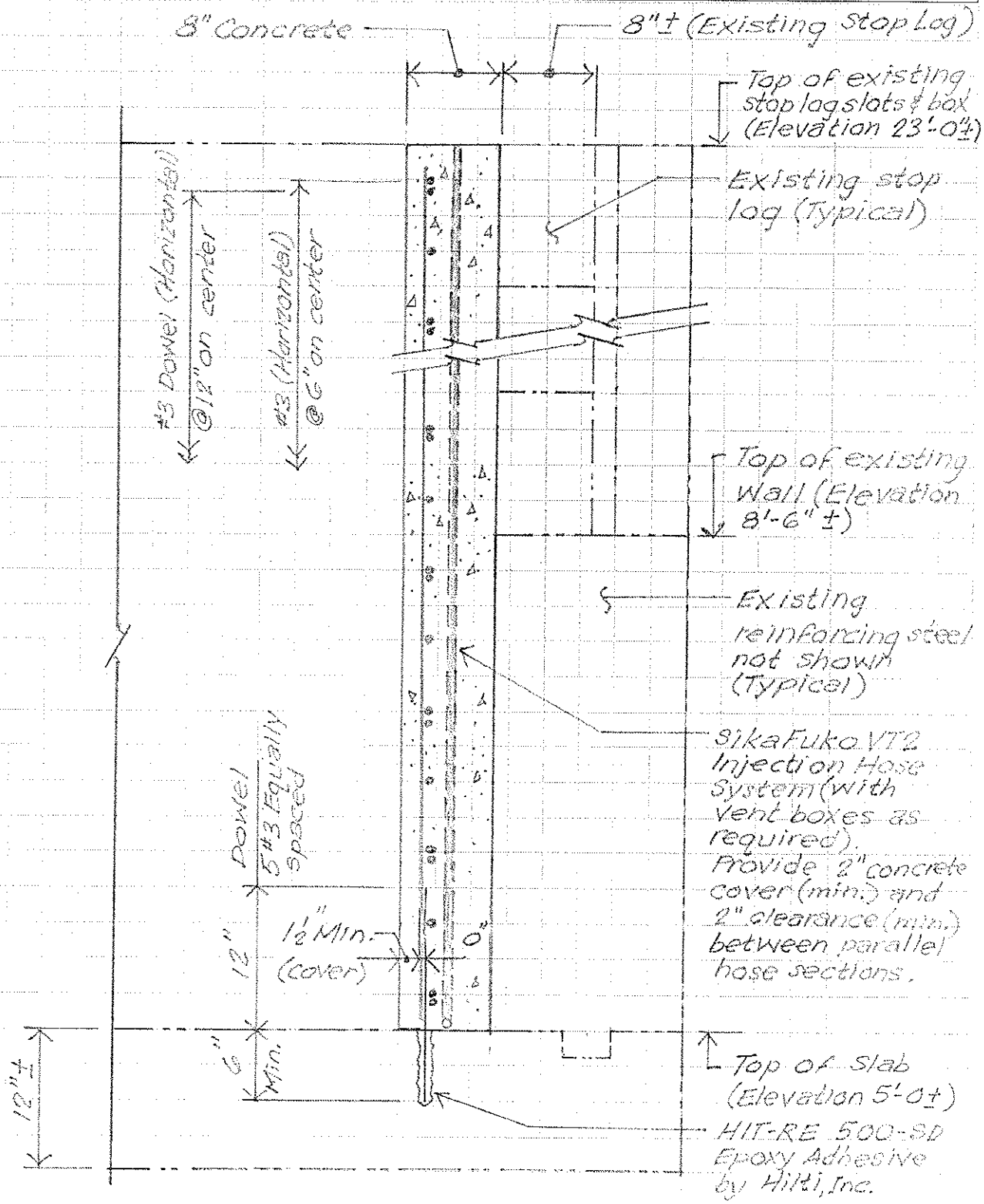
NOTES:
1. Concrete shall have a minimum compressive strength of: 3,000 p.s.i. at 28 days.
2. Reinforcing steel shall be Grade 60 conforming to ASTM A615
3. Concrete mixing, delivery, placing, and curing shall be in accordance with the American Concrete Institute ACI 301-10 "Specifications for Structural Concrete."
4. High pressure rinse existing structure with potable water before placing concrete.

 Form No. 730004(Oct 2003)

Dominion®

Engineering Work Sheet – Fossil & Hydro

Project: Possum Point Ash Pond C Outlet Box Stop Log Sealing	Document Type: ☐ Calculation ☑ Sketch ☐ Other	Sheet No.: — of —
	Doc. No.: PP-CL004162015-SSK-002	Rev. No.: 0 (Issued For Construction)
Subject: Section A-A	Prepared By: C. Cole	Date: 4-17-2015
System: —	Checked By: —	Date: —



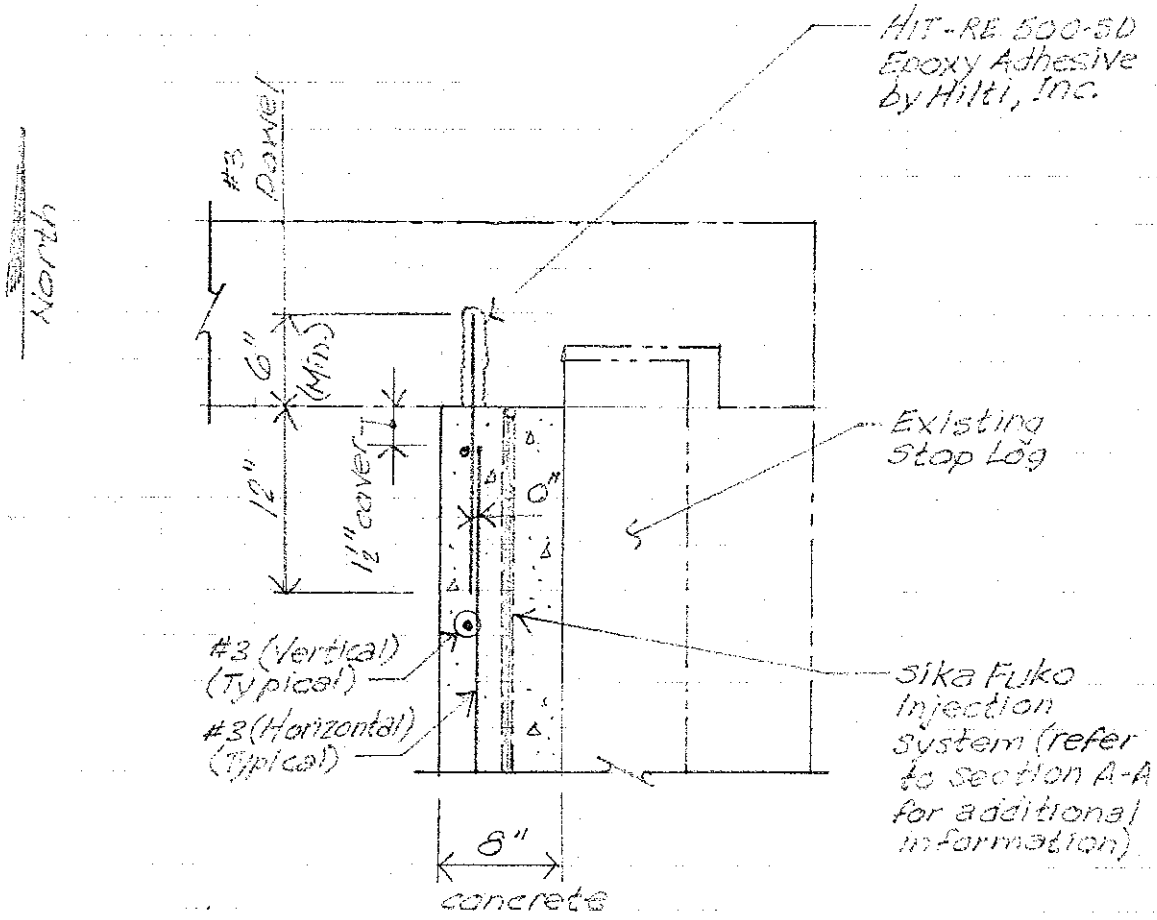
SECTION A-A (SSK-001)

SCALE: 1" = 1'-0"

Dominion®

Engineering Work Sheet – Fossil & Hydro

Project: Clinch River Ash Pond C Outlet Stop Log Sealing	Document Type: ☐ Calculation ☑ Sketch ☐ Other	Sheet No.: — of —
	Doc. No.: PP-CLC041720 15-SSK-003	Rev. No.: 0 (Issued for Construction)
Subject: Detail 1	Prepared By: C. Cole	Date: 4.17.2015
System: —	Checked By: —	Date: —



DETAIL 1 (SSK-001)
SCALE: 1" = 1'-0"

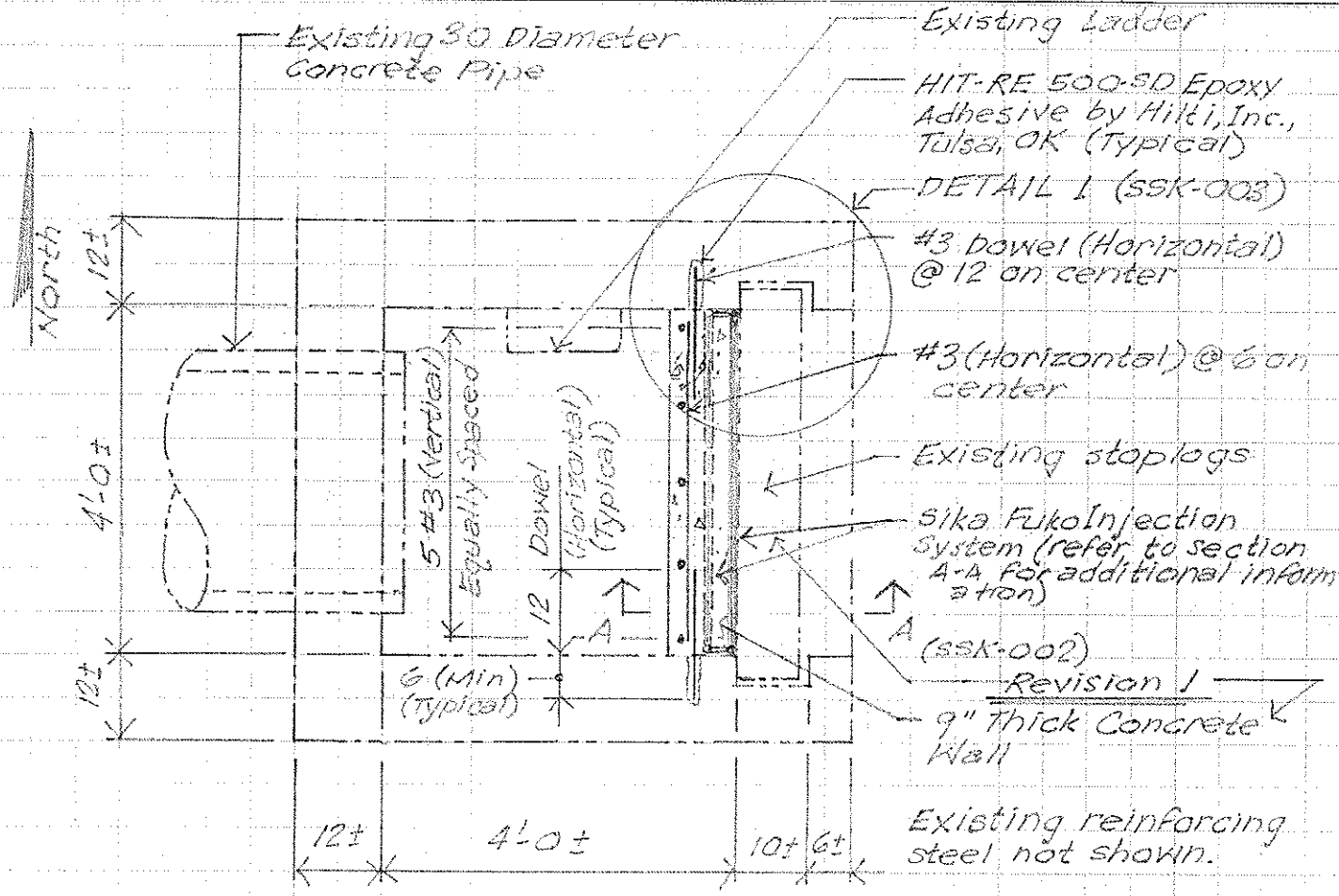
NOTES (continued from SSK-001):

5. Sika Fuko Injection System shall be installed and used in accordance with instructions and specifications by Sika Corporation, Lyndhurst, NJ. Inject Sika Fuko VT2 Injection Hose V22 with Sika 306 Injection Resin 21 days (minimum) after placing concrete.
6. Drilling, mixing, placing, and setting (curing) of HIT-RE 500-SD Epoxy Adhesive shall be in accordance with Hilti, Inc, (Tulsa, OK) instructions.

Dominion®

Engineering Work Sheet – Fossil & Hydro

Project Possum Point Ash Pond 2 Outlet Box Stop Log Sealing	Document Type ☐ Calculation ☑ Sketch ☐ Other	Sheet No. — of —
	Doc. No. PP-CLC04162015-SSK-001	Rev. No. 1 (Revised Wall thick. & Sika Fuko)
Subject Plan at Existing Ash Pond Outlet Box	Prepared By C. Cole	Date 4-21-2015
System —	Checked By —	Date —



PLAN AT EXISTING ASH POND OUTLET BOX

SCALE: ½" = 1'-0" All dimensions are inches unless noted.

Reference: Stone & Webster Engineering Corporation drawing no. 8958-FC-51

NOTES:
1. Concrete shall have a minimum compressive strength of 4,000 p.s.i. at 28 days.

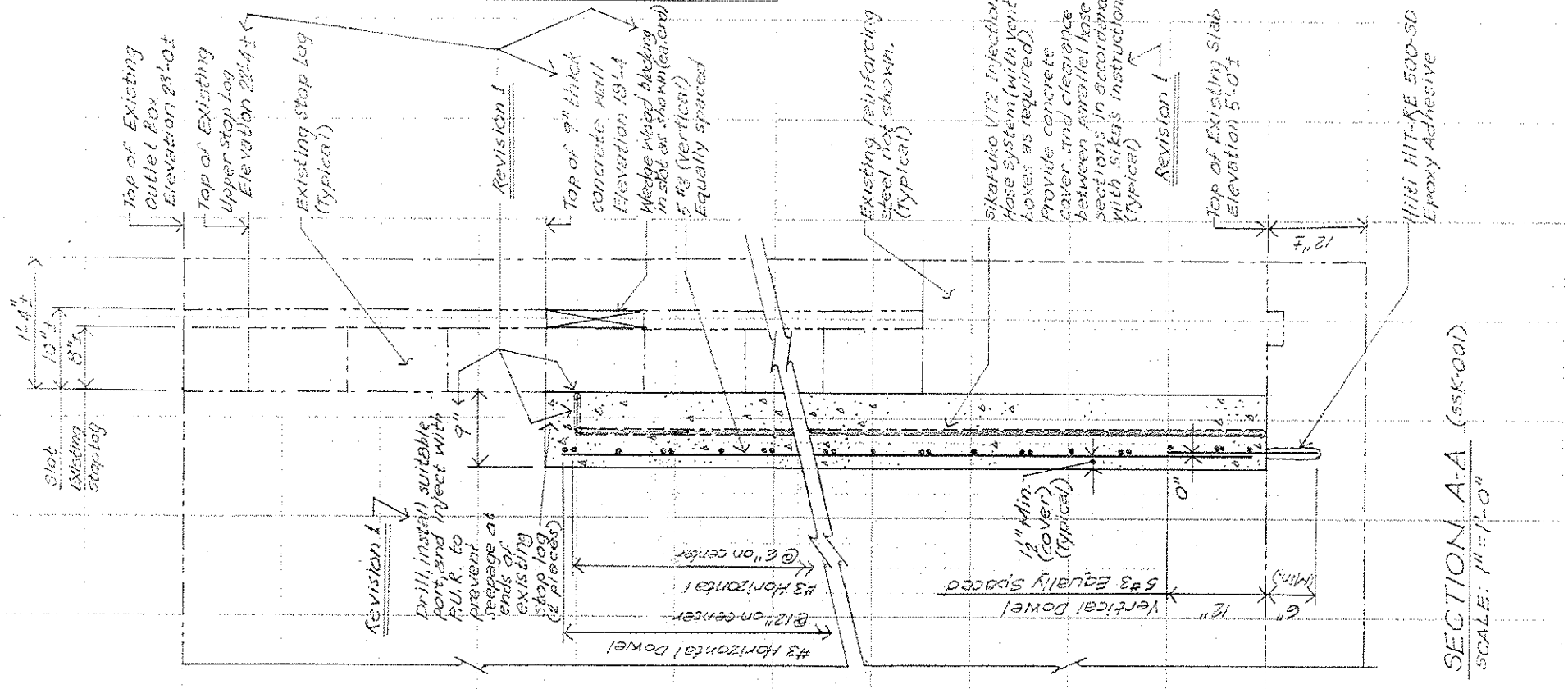
Revision 1 →
2. Reinforcing steel shall be Grade 60 conforming to ASTM A615
3. Concrete mixing, delivery, placing, and curing shall be in accordance with the American Concrete Institute ACI 301-10 "Specifications for Structural Concrete."
4. High pressure rinse existing structure with potable water before placing concrete.

 Form No. 720204(Oct 2003)

Dominion

Engineering Work Sheet — Fossil & Hydro

Project: Possum Point Ash Pond C Outlet Box Stop Log Sealing	Document Type: ☐ Calculation ☒ Sketch ☐ Other	Sheet No. — of —
	Doc. No. PP-CLC041&2015-S01K-002	Rev. No. 1 (Revised Top of Wall, Thickness & Sika Fuko)
Subject: Section A-A	Prepared By: C. Cole	Date: 4-21-2015
System: —	Checked By: —	Date: —



SECTION A-A (55K-001)

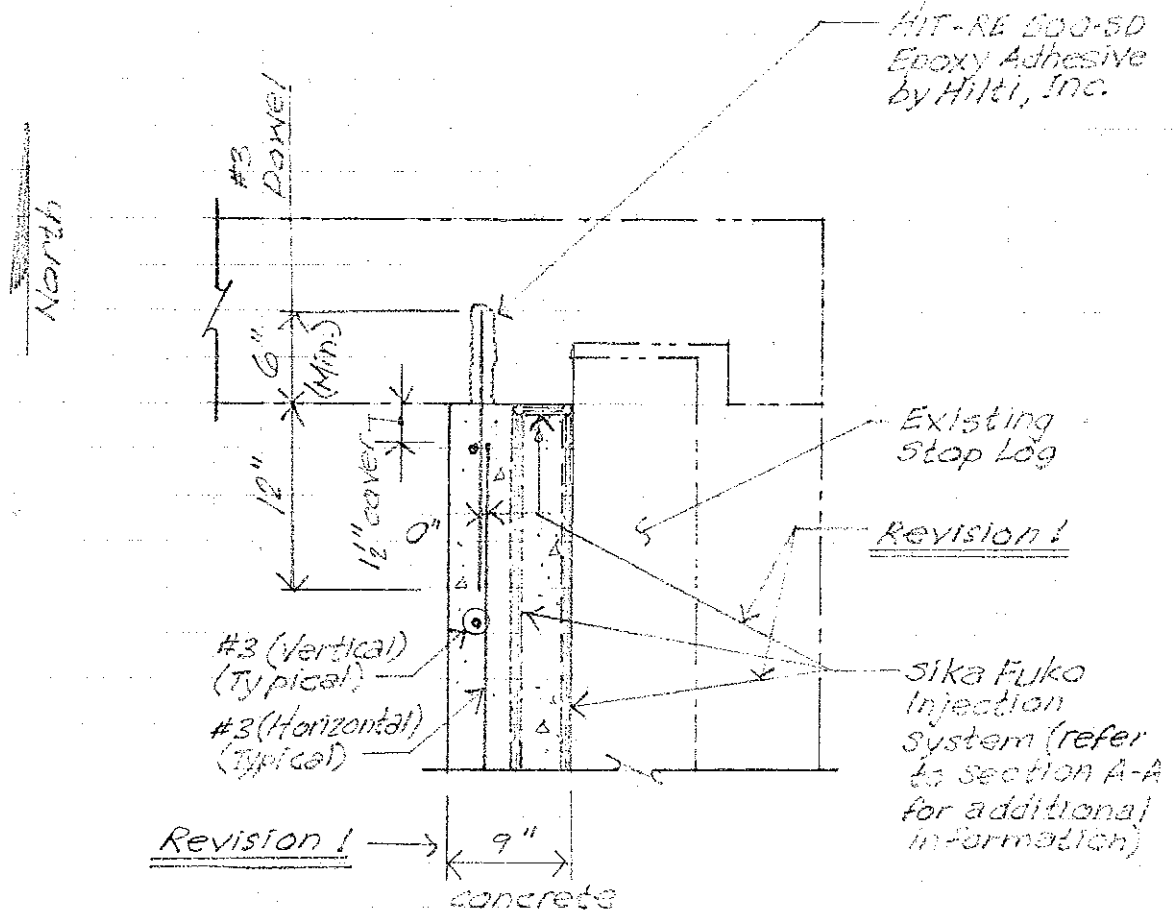
SCALE: 1" = 1'-0"

8903

Dominion®

Engineering Work Sheet – Fossil & Hydro

Project Possum Point Ash Pond C Outlet Stop Log Sealing	Document Type ☐ Calculation ☑ Sketch ☐ Other	Sheet No. — of —
	Doc. No. PP-CLC04-162015-SSK-005	Rev. No. 1 (Revised Wall Thick & Sika Fuko)
Subject Detail 1	Prepared By C. Cole	Date 3-21-2015
System —	Checked By —	Date —



DETAIL 1 (SSK-001)
SCALE: 1"=1'-0"

NOTES (continued from SSK-001):

5. Sika Fuko Injection System shall be installed and used in accordance with instructions and specifications by Sika Corporation, Lyndhurst, NJ. Inject Sika Fuko VT2 Injection Hose VT2 with Sika 108 Injection Resin
Revision 1 → 28 days (minimum) after placing concrete.
6. Drilling, mixing, placing, and setting (curing) of HIT-RE 500-SD Epoxy Adhesive shall be in accordance with Hilti, Inc, (Tulsa, OK) instructions.
7. Submit concrete mix design for review.

Doug Wight (Generation - 34)

From: Carter Cole (Generation - 34)
Sent: Thursday, April 30, 2015 8:10 PM
To: Doug Wight (Generation - 34)
Cc: David Craymer (Generation - 34); Jeffrey C Heffelman (Generation - 3); Jeffrey R Marcell (Generation - 3); Michael J Winters (Generation - 34); Gregory A Florence (Generation - 3); Leonard C Pope (Generation - 34); David B. Mrowiec; Ryan Nolasco
Subject: Possum Point Ash Pond C - Stop Log Sealing - April 30, 2015 Update

Importance: High

Doug,

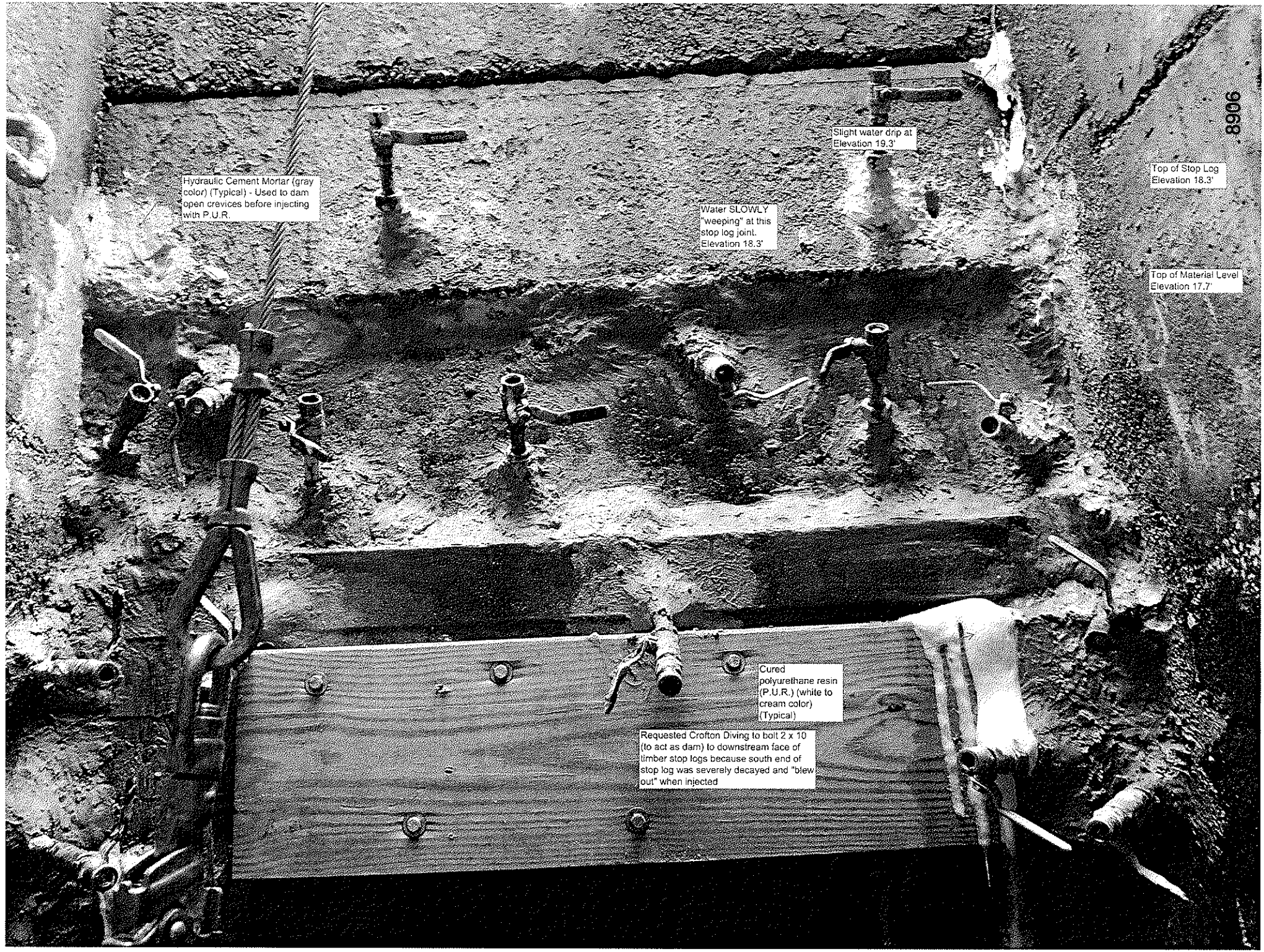
- Mr. Ryan Nolasco of Crofton Diving provided several photographs of the completed work at the Possum Point Ash Pond C Outlet Box, one of which I annotated and attached showing the west (downstream) face of the Possum Point Ash Pond C stop logs at the end of Thursday, April 30. ***[NOTE: When viewing the attached file in Adobe Acrobat, I suggest that you "Zoom to Page Level."]***
- I estimate that the Ash Pond C (water) level was at approximately 19.0' today.
- Based on my observations (refer to attached file) at the close of today, it is my professional opinion that any MINOR observed seeping through stop logs NOW originates ABOVE the material level (Elevation 17.7') as a result of Crofton Diving's work.
- Crofton Diving will attempt to remove the cured polyurethane resin (P.U.R.) that formed on the east side of the Outlet Box (upstream of the stop logs) tomorrow and then demobilize.
- Crofton Diving will return to Possum Point on Monday, May 4 to work on sealing leaks at the Ash Pond E Decant Structure.

Please feel free to call me if you have any questions or need additional information

Regards,

Carter

Carter L. Cole, P.E. [Virginia - 015258]
Power Generation Engineering - Dominion Resources Services, Inc.
Phone: 804-273-3049 (Office) 804-399-7820 (Cell)


Hydraulic Cement Mortar (gray color) (Typical) - Used to dam open crevices before injecting with P.U.R.
Slight water drip at Elevation 19.3'
Top of Stop Log Elevation 18.3'
Water SLOWLY "weeping" at this stop log joint. Elevation 18.3'
Top of Material Level Elevation 17.7'
Cured polyurethane resin (P.U.R.) (white to cream color) (Typical)
Requested Crofton Diving to bolt 2 x 10 (to act as dam) to downstream face of timber stop logs because south end of stop log was severely decayed and "blew out" when injected
8906


8907

8909

PHOTO 1
Seep at Pond A. North of Pond A low point.

PHOTO 2
Seep at Pond A. North of Pond A low point.

PHOTO 3
Seep at Pond B. South of Pond B low point.

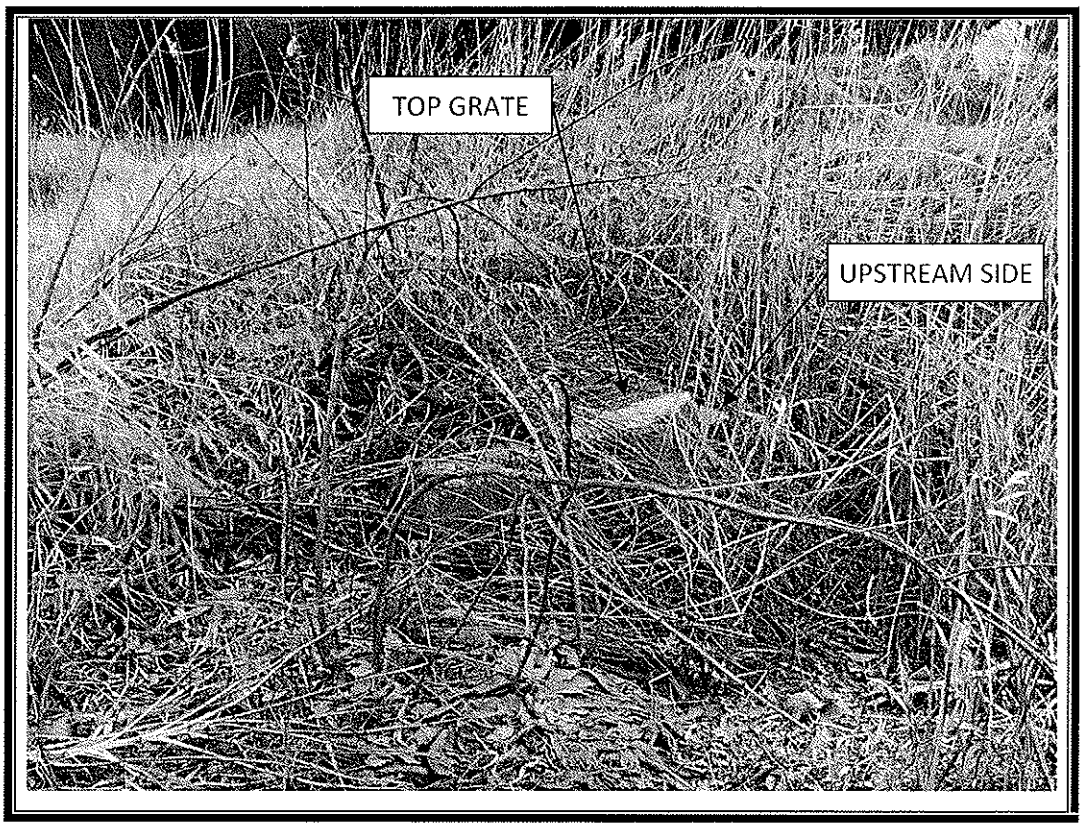


PHOTO 1
Concrete outlet riser structure. Partially covered with soil and vegetation.

PHOTO 2
Concrete outlet pipe (30-inch dia.) looking toward Quantico Creek. Note displaced joint.

PHOTO 3
Concrete outlet pipe (30-inch dia.) looking away from Quantico Creek.

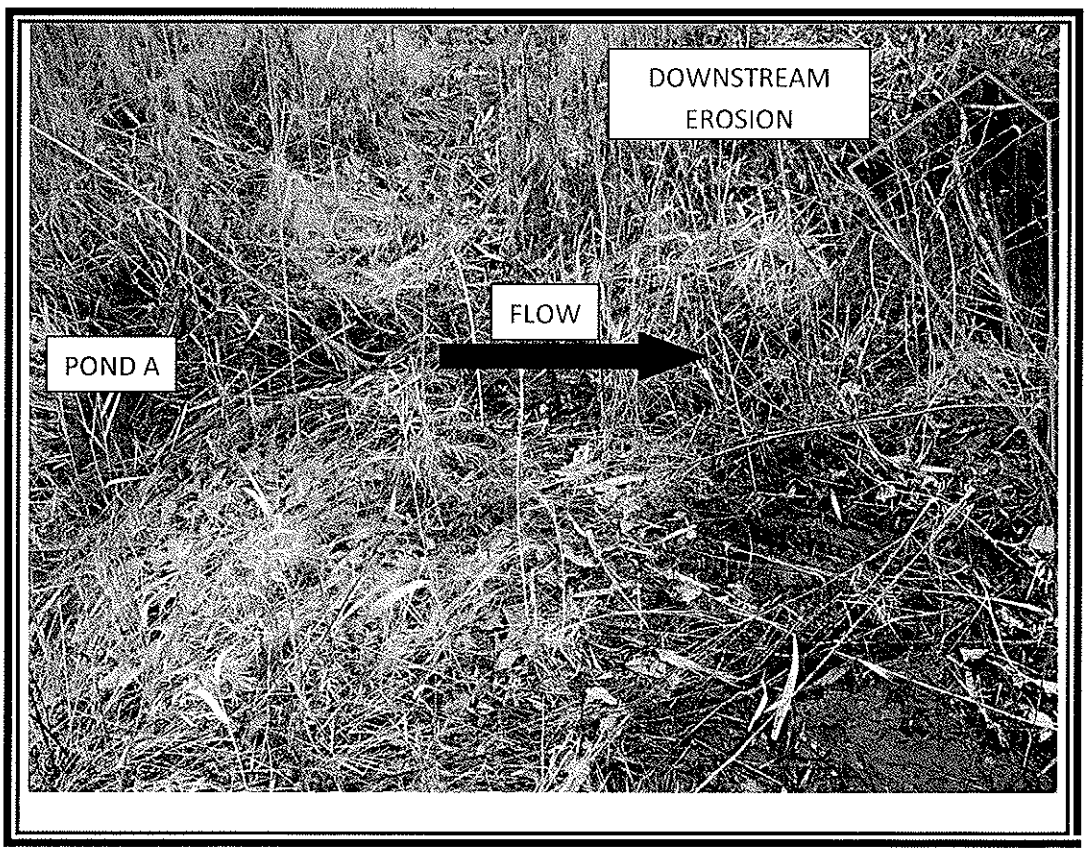


PHOTO 4
Pond A overflow location.

MEMORANDUM

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHERN REGIONAL OFFICE

13901 Crown Court Woodbridge, VA 22193

SUBJECT: Dominion – Possum Point Power Station VA0002071

TO: Tom Faha

FROM: Dan Demers and Susan Mackert

DATE: April 15, 2014

UPDATED: April 16, 2014

COPIES: Trisha Beasley, Rich Doucette, Bryant Thomas

BACKGROUND

Staff received a call from Dominion on Wednesday, April 9, 2014, concerning the presence of three previously unaccounted for ash ponds (A, B, and C) located at the Possum Point Power Station. The ash pond complex is located on a parcel of land between Possum Point Road and Quantico Creek (Attachment 1). The ash pond complex was constructed in approximately 1955 and was last used in 1972. Ash was deposited in all three ponds starting with "A", moving to "B", and then to "C" as the ponds filled.

Dominion noted that a discharge structure and discharge pipe remain in place at Ash Pond C which has a direct discharge to Quantico Creek. A sample was collected from the discharge. According to Dominion, sample results indicate the presence of some trace metals typically associated with ash pond operations.

Dominion also noted a breach of the berm associated with Ash Pond A. Dominion believes storm water has collected along the berm causing the storm water to overtop the berm. An area approximately five feet wide by six feet deep has been eroded. It is Dominion's belief that this has been occurring for some time.

After speaking with Dominion, staff briefed Northern Regional Office (NRO) management on April 9, 2014. NRO staff was directed to conduct a site visit to the Possum Point Power Station by week's end.

SUMMARY OF FIELD OBSERVATIONS

April 11, 2014

On April 11, 2014, Dan Demers and Susan Mackert conducted a site visit to observe the ash pond complex and gather additional information from Dominion. Dominion staff present included Ken Roller and Jeff Marcell. Photographs taken during this site visit are provided in Attachment 2. The following are noted:

- The facility ceased the use of coal in March 2003.
- The quantity of ash deposited in to the ash pond complex is unknown. Staff requested that, if the information is available, Dominion review the amount of coal burned during the usage period of the ash ponds to determine an estimate of ash quantity.
- The acreage of each ash pond is unknown. An aerial survey was conducted within the last two weeks and Dominion anticipates acreage information will be available soon. Additionally, the survey will be used to determine the extent of the complex so that a proposed channel can be constructed to redirect all surface water flow to Ash Pond C; thereby stopping the apparent over topping of the berm and subsequent erosion at the area of the breach.

- Dam safety staff from the Department of Conservation and Recreation (DCR) has been contacted. Dominion is awaiting guidance from DCR staff concerning core sampling. As of the date of the site visit, a schedule for core sampling was not in place.

- Staff from the U.S. Army Corps of Engineers has been contacted concerning a wetlands determination.

- Ash Ponds A, B, and C are overgrown with vegetation (photos 1 – 9). There is no evidence that the ash ponds are lined (synthetic or natural) or capped.

- A discharge weir structure does remain in place at Ash Pond C (photos 10 – 11). The structure at Ash Pond C is draining and/or seeping through a gap in the wall at approximately thirty-five inches below the top as measured by Dominion staff. Flow is estimated at approximately two gallons per minute (photo 12). The discharge is directly to Quantico Creek (photos 13 – 14) and is tidally influenced.

- Two groundwater monitoring wells are located just off the access road in to the ash pond complex in closest proximity to Ash Pond C (photo 15).

- The berm wall for Ash Ponds A, B, and C is one continuous wall (photo 16). There is a downward slope towards Quantico Creek (photo 17). The toe of the path that serves as the berm appears to have seepage along all three ash ponds.

- There is an intermittent overflow point from Ash Pond B (photos 18 – 19). Heavy rains cause this area to overtop the berm wall and drain down the berm slope towards Quantico Creek (photo 20). Standing water in this area appeared dark in color.

- The breach area identified at Ash Pond A (photo 21) appeared to have some vegetation and did not appear to be new. Staff estimates this area to be possibly six to nine months old. Dominion noted a constant flow since the breach was first discovered in March 2014. The flow appeared to be a combination of surface drainage (photos 22 - 24) and seepage through the berm. There did not appear to be erosion at the low flow observed. However, during rain events it does appear that there is potential for severe erosion from water running over the berm. The discharge would flow across a heavily vegetated area prior to any discharge to Quantico Creek (photo 25). Samples have not been collected from this point.

- Ash Pond A has an additional area of flow along the southeastern edge adjacent to the closed sewage treatment lagoons (photos 26 - 28) that may have seepage through the berm.

- The facility's existing ash ponds, D and E, were also observed. No issues were noted.

- Ash Pond D is a lined structure with a surface area of 72 acres and a maximum depth of 120 feet. The pond was placed in to service in 1989 and serves as the permanent repository for sediment and ash generated at the Possum Point Power Station.

- Ash Pond E is an unlined structure with a surface area of approximately 40 acres.

April 15, 2014

On April 15, 2014, Susan Mackert conducted a site visit to observe the ash pond complex due to the heavy rains forecasted for the area. Dominion staff present included Jeff Marcell. Photographs taken during this site visit are provided in Attachment 3. The following are noted:

- Weather data for the Possum Point Power Station is obtained from the National Oceanic and Atmospheric Administration (NOAA) station at the Quantico Marine Corps Air Facility. Rainfall data for April 15, 2014, is provided in Attachment 4.

- Rain began falling at approximately 6:00 am on April 15, 2014. Rainfall was heavy at times with approximately one inch being recorded prior to the site visit.

- A visual observation of the breach area identified at Ash Pond A was made. The area appeared to be visually consistent with observations noted during the April 11, 2014, site visit. No water was noted as running over the berm (photo 1). Water collecting at the edge of Ash Pond A was noted as flowing (photo 2).

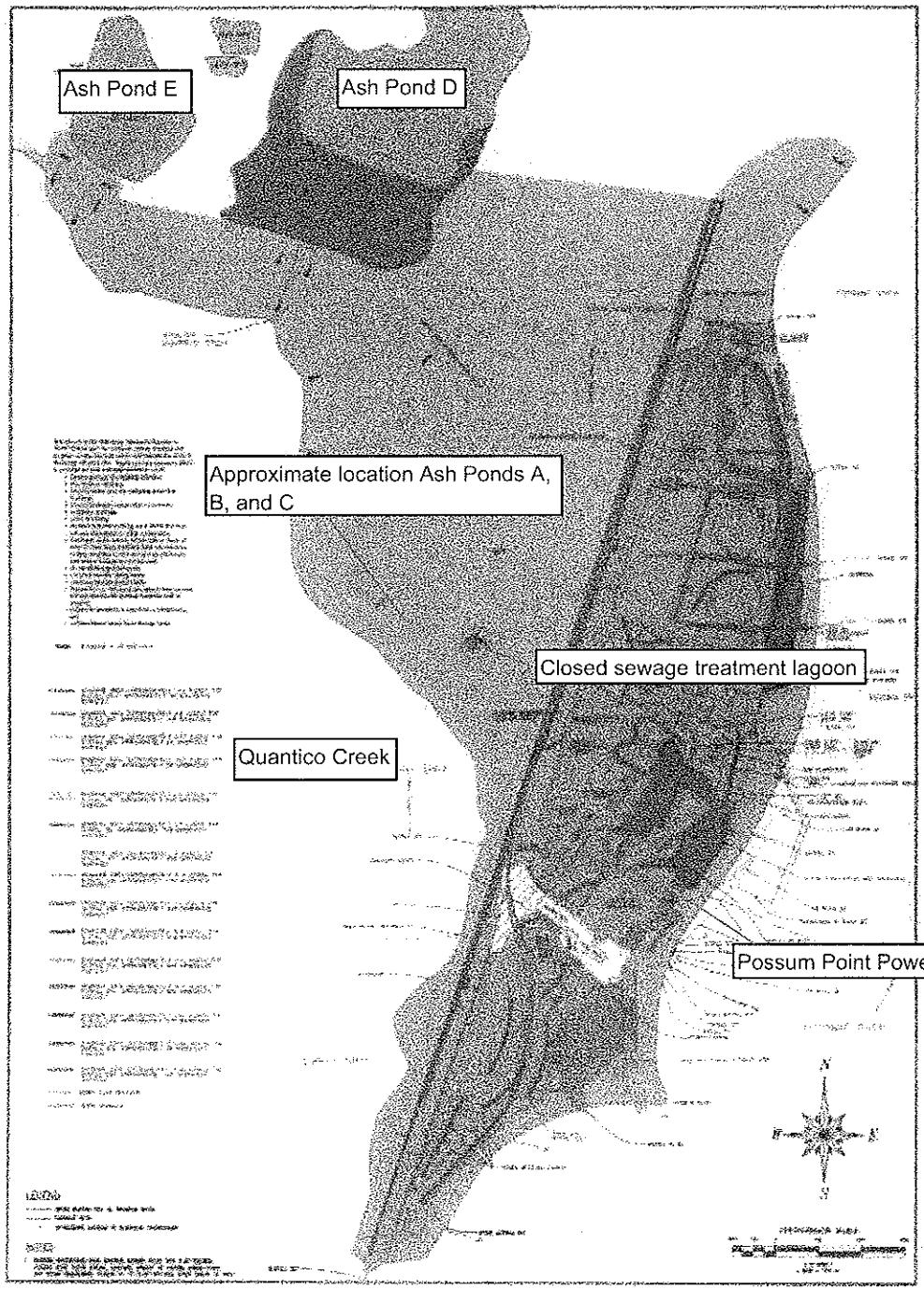
- Flow from the breach area was observed (photos 3 – 4). The flow was distinctly audible, which was not the case during the previous site visit on April 11, 2014.

- A visual observation of the suspected overflow point at Ash Pond B was made. The area appeared to be visually consistent with observations noted during the April 11, 2014, site visit. Water was observed collecting at the edge of Ash Pond B (photo 5). No water was observed running over the berm (photos 6 – 7).

- Clarification was provided by Dominion concerning the two groundwater monitoring wells located just off the access road in to the ash pond complex. The wells are included in a groundwater monitoring plan required by the facility's Virginia Pollutant Discharge Elimination System (VPDES) permit number VA0002071. The wells do not capture water from the ash pond complex.

- Dominion stated DCR staff will be on site Thursday, April 24, 2014.

Attachment 1 - Maps


Ash Pond E
Ash Pond D
Approximate location Ash Ponds A, B, and C
Closed sewage treatment lagoon
Quantico Creek
Possum Point Power Station

COCKPIT PT. ROAD
Possum Point Rd
ACCESS ROAD
CONCRETE RISER AN
30"-CMP OUTLET PI
POND C
POND B
FLOW OF EMBEDDED WATER
EMBANKMENT
POND A
OF WATER PONDS

Attachment 2: Photographs from April 11, 2014 Field Observations

Photo 1. Ash Pond C.

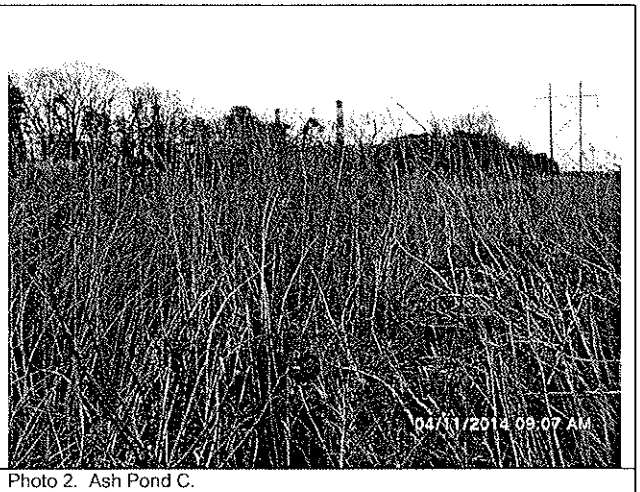


Photo 2. Ash Pond C.

Photo 3. Ash Pond C.

Photo 4. Ash Pond C.

Photo 5. Transition point from Ash Pond C to Ash Pond B.

Photo 6. Transition point from Ash Pond C to Ash Pond B.

Photo 7. Transition point from Ash Pond B to Ash Pond A.

Photo 8. Ash Pond A.

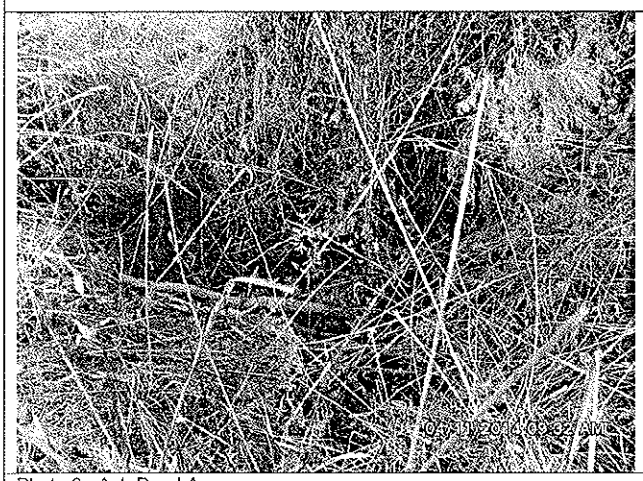


Photo 9. Ash Pond A.

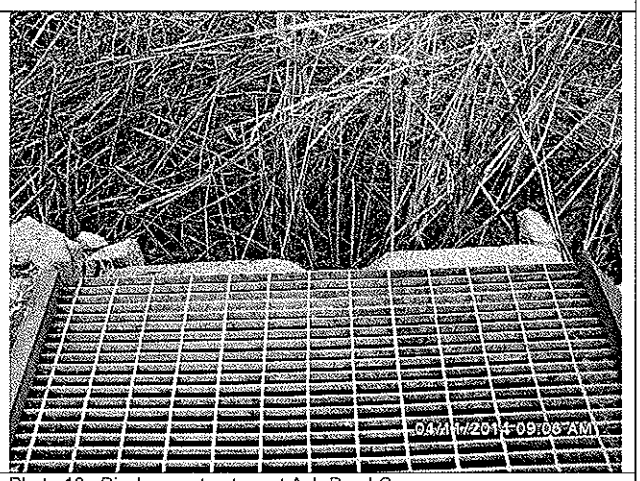


Photo 10. Discharge structure at Ash Pond C.

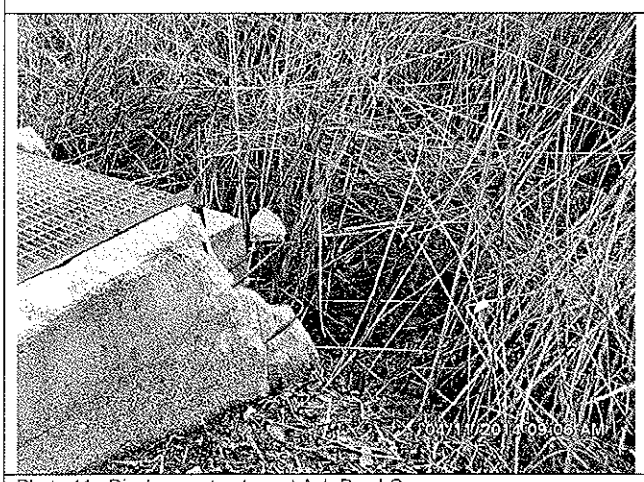


Photo 11. Discharge structure at Ash Pond C.

Photo 12. Flow into discharge structure at Ash Pond C.

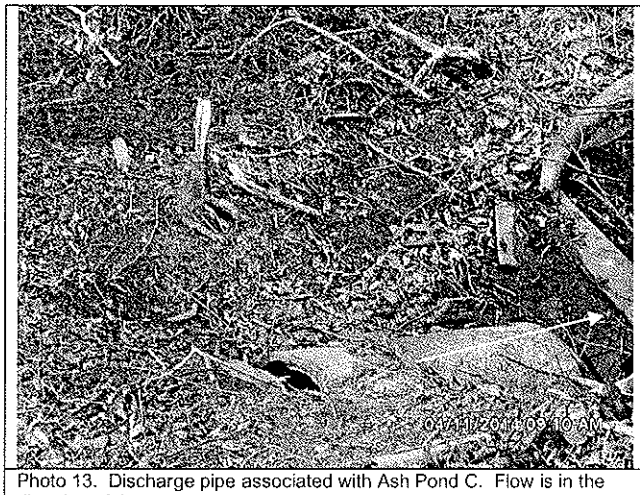


Photo 13. Discharge pipe associated with Ash Pond C. Flow is in the direction of the arrow.

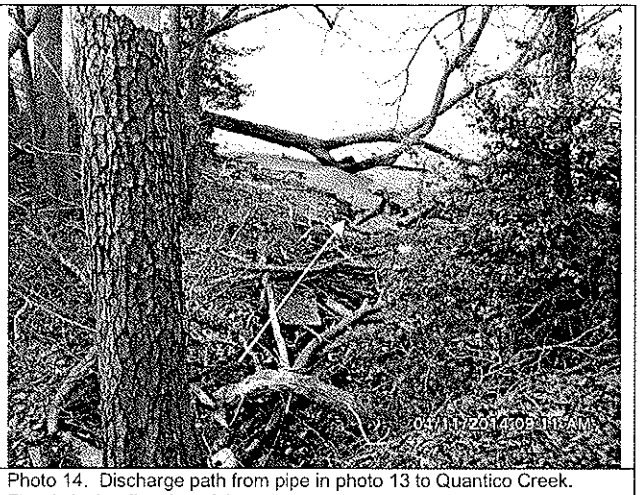


Photo 14. Discharge path from pipe in photo 13 to Quantico Creek. Flow is in the direction of the arrow.

Photo 15. Groundwater monitoring wells located in proximity to Ash Pond C.

Photo 16. Berm wall.

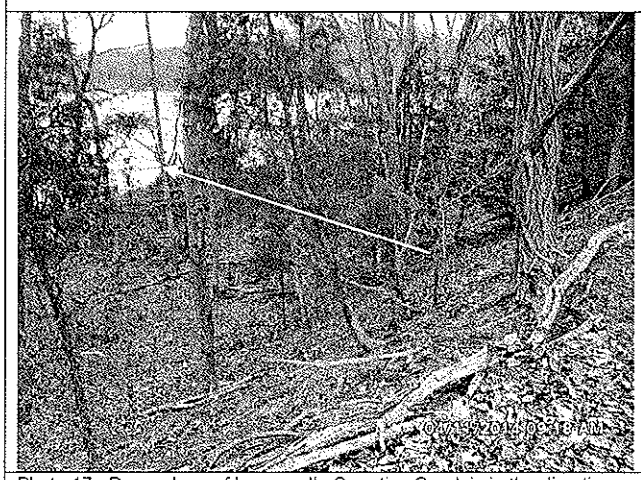


Photo 17. Down slope of berm wall. Quantico Creek is in the direction of the arrow.

Photo 18. Overflow point from Ash Pond B.

Photo 19. Overflow point from Ash Pond B.

Photo 20. Overflow point from Ash Pond B reaching downward slope towards Quantico Creek.

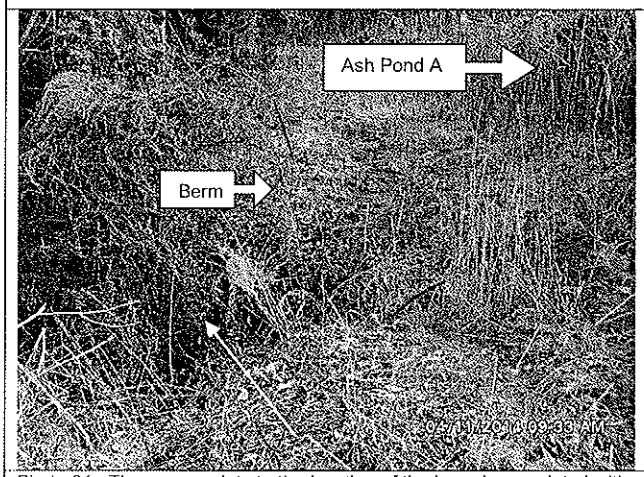


Photo 21. The arrow points to the location of the breach associated with Ash Pond A.

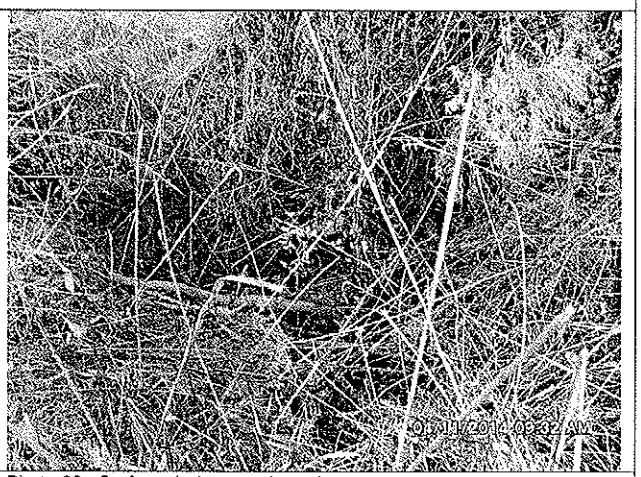


Photo 22. Surface drainage to breach.

Photo 23. Surface drainage to breach.

Photo 24. Surface drainage to breach.

Photo 25. Flow from breach area would travel in the direction of the arrow towards Quantico Creek.

Photo 26. Southeastern edge of Ash Pond A adjacent to closed sewage treatment lagoons.

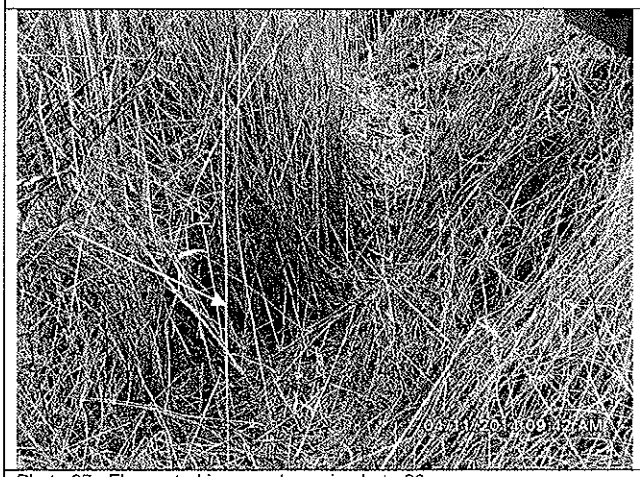


Photo 27. Flow noted in area shown in photo 26.

Photo 28. Flow noted in area shown in photo 26.

Attachment 3: Photographs from April 15, 2014 Field Observations

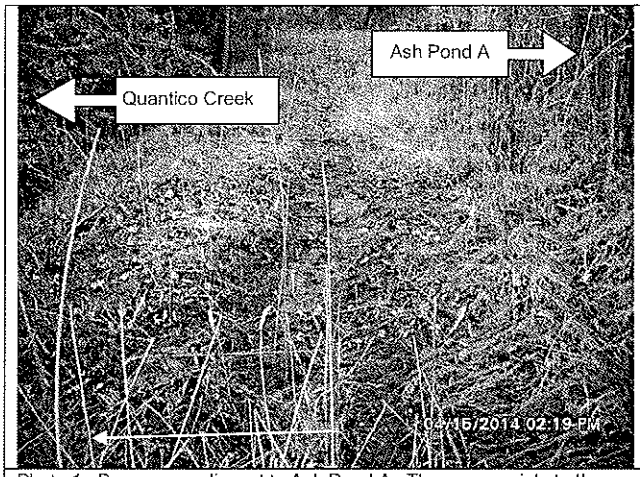


Photo 1. Berm area adjacent to Ash Pond A. The arrow points to the area of the breach. Note standing water on berm.

Photo 2. Water collected at the edge of Ash Pond A. Water was flowing in the direction of the arrow.

Photo 3. Breach area of Ash Pond A. Flow from the breach is in the direction of the arrow.

Photo 4. Close up of breach area of Ash Pond A.

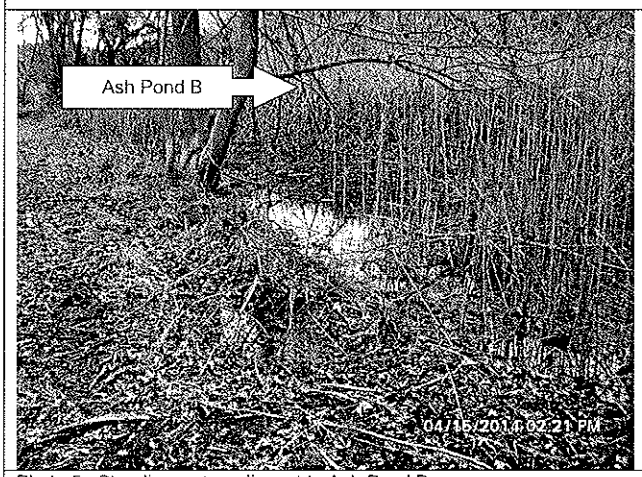


Photo 5. Standing water adjacent to Ash Pond B.

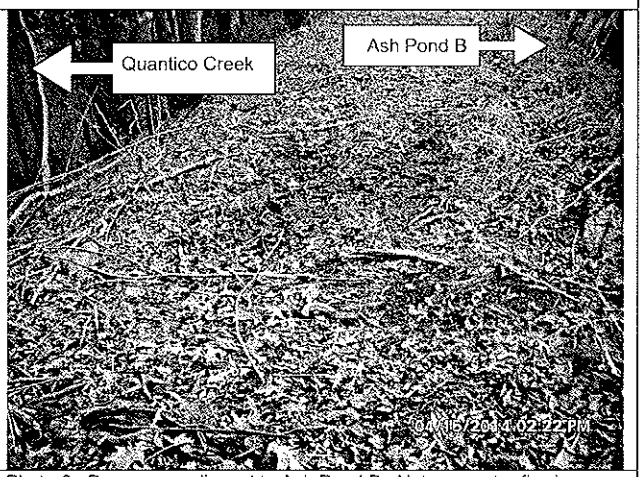


Photo 6. Berm area adjacent to Ash Pond B. Note no water flowing over the berm.

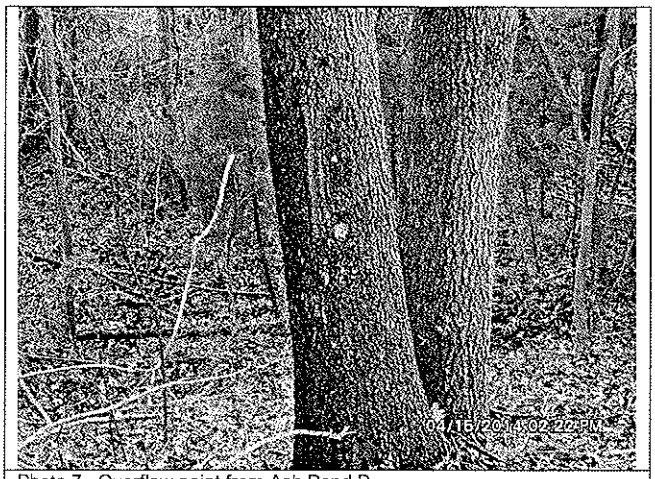


Photo 7. Overflow point from Ash Pond B.

Attachment 4: Rain Data from April 15, 2014

Weather observations for the past three days

Quantico Marine Corps Air Facility

Enter Your "City, ST" or zip code [Go] metric en español

Date	Time (edt)	Wind (mph)	Vis. (mi.)	Weather	Sky Cond.	Temperature (°F) Air	Dwpt	6 hour Max.	6 hour Min.	Relative Humidity	Wind Chill (°F)	Heat Index (°F)	Pressure altimeter (in)	Pressure sea level (mb)	Precipitation (in.) 1 hr	3 hr	6 hr
16	10:56	N 21 G 26	10.00	Fair and Breezy	CLR	41	14			33%	32	NA	30.46	1031.6			
16	09:56	N 21 G 26	10.00	Fair and Breezy	CLR	39	13			34%	29	NA	30.44	1030.8			
16	08:56	N 15 G 28	10.00	Fair	CLR	37	15			41%	28	NA	30.42	1030.0			
16	07:56	N 13 G 22	10.00	Fair	CLR	35	17	36	33	48%	26	NA	30.37	1028.5			
16	06:56	N 14 G 23	10.00	Fair	CLR	33	16			49%	23	NA	30.33	1027.3			
16	05:56	N 12 G 22	10.00	Fair	CLR	34	17			50%	25	NA	30.29	1025.6			
16	04:56	N 14 G 22	10.00	Fair	CLR	34	17			50%	25	NA	30.24	1024.1			
16	03:56	N 15 G 31	10.00	Fair	CLR	35	15			44%	25	NA	30.20	1022.6			
16	02:56	N 18 G 30	10.00	Fair	CLR	35	17			48%	24	NA	30.17	1021.6			
16	01:56	N 15 G 24	10.00	Fair	CLR	36	19	41	36	50%	27	NA	30.13	1020.4			0.04
16	00:56	N 24 G 38	10.00	A Few Clouds and Breezy	FEW048	37	21			52%	26	NA	30.11	1019.6			
15	23:56	N 13 G 25	10.00	Mostly Cloudy	BKN044	39	24			55%	31	NA	30.08	1018.6			
15	22:56	N 13	10.00	Overcast	OVC040	40	30			68%	32	NA	30.06	1018.1		0.04	
15	21:56	NE 9	10.00	Overcast	SCT010 BKN030 OVC050	39	34			82%	33	NA	30.00	1015.8	0.02		
15	20:56	N 15 G 22	6.00	Light Rain Fog/Mist	FEW015 BKN030 OVC060	39	35			86%	31	NA	29.95	1014.3	0.02		
15	19:56	N 17 G 26	5.00	Light Rain	SCT015 BKN030 OVC060	41	36	73	41	82%	33	NA	29.90	1012.5	0.09		0.36
15	18:56	N 14 G 30	7.00	Light Rain	SCT020 OVC050	43	37			80%	36	NA	29.86	1011.1	0.03		
15	17:56	N 21 G 35	6.00	Light Rain and Breezy	BKN020 OVC035	45	40			83%	37	NA	29.79	1008.8	0.08		
15	16:56	N 21	3.00	Light	FEW016	47	41			80%	39	NA	29.74	1007.3	0.08	0.16	

April

		G 30		Rain and Breezy	BKN021 OVC039													
15	15:56	N 21 G 31	4.00	Light Rain and Breezy	FEW010 OVC030	50	45			83%	43	NA	29.70	1005.7	0.08			
15	14:56	N 14 G 25	10.00	Light Rain	FEW014 OVC029	53	48			83%	NA	NA	29.65	1004.3				
15	13:56	SW 17 G 25	10.00	Overcast	BKN030 OVC100	72	59	72	63	64%	NA	NA	29.57	1001.5				0.98
15	12:56	SW 15	10.00	Overcast	SCT031 BKN041 OVC095	68	63			84%	NA	NA	29.58	1001.7				
15	11:56	S 13	10.00	Overcast	BKN018 OVC026	67	64			91%	NA	NA	29.59	1001.9				
15	10:56	S 12	10.00	Overcast	BKN028 BKN060 OVC110	64	62			93%	NA	NA	29.57	1001.5		0.98		
15	09:56	SW 6	10.00	Light Rain	SCT028 BKN060 OVC110	64	62			93%	NA	NA	29.62	1003.1	0.31			
15	08:56	SW 10 G 21	0.75	Heavy Rain Fog/Mist	BKN017 BKN027 OVC043	65	62			90%	NA	NA	29.63	1003.6	0.67			
15	07:56	S 16	6.00	Light Rain Fog/Mist	SCT020 BKN026 OVC045	64	60	66	64	87%	NA	NA	29.64	1003.8	0.04			0.05
15	06:56	S 18	10.00	Light Rain	BKN025 OVC031	65	60			84%	NA	NA	29.65	1004.3	0.01			
15	05:56	S 14	10.00	Light Rain	BKN028 BKN032 OVC044	65	60			84%	NA	NA	29.68	1005.0				
15	04:56	S 12	10.00	Overcast	OVC027	64	59			84%	NA	NA	29.70	1005.9				
15	03:56	S 13	10.00	Overcast	OVC026	66	59			78%	NA	NA	29.73	1006.8				
15	02:56	S 12	10.00	Mostly Cloudy	BKN031 BKN110	64	59			84%	NA	NA	29.75	1007.6				
15	01:56	S 12	10.00	Partly Cloudy	FEW042 SCT049 SCT060	65	59	70	64	81%	NA	NA	29.78	1008.6				0.01
15	00:56	SW 15	10.00	Overcast	OVC046	68	59			73%	NA	NA	29.81	1009.5				
14	23:56	SW 16	10.00	Light Rain	FEW036 BKN047 OVC055	69	59			70%	NA	NA	29.82	1009.9	0.01			
14	22:56	S 12	10.00	Overcast	OVC075	67	57			71%	NA	NA	29.84	1010.4				
14	21:56	SW 6	10.00	Mostly Cloudy	BKN090	67	55			66%	NA	NA	29.84	1010.6				
14	20:56	SW 6	10.00	Fair	CLR	66	56			70%	NA	NA	29.85	1010.8				
14	19:56	SW 8	10.00	Fair	CLR	67	56	78	65	68%	NA	NA	29.84	1010.5				
14	18:56	S 12	10.00	Fair	CLR	67	56			68%	NA	NA	29.85	1010.8				
14	17:56	SW 14 G 23	10.00	Overcast	FEW020 BKN060 OVC180	75	51			43%	NA	NA	29.87	1011.6				
14	16:56	SW 9	10.00	Overcast	FEW060	77	51			40%	NA	78	29.88	1012.1				

April

		G 20			OVC180									
14	15:56	SW 13 G 29	10.00	Overcast	SCT060 OVC200	75	53			46%	NA	NA	29.90	1012.6
14	14:56	SW 10 G 24	10.00	Mostly Cloudy	SCT070 BKN150	77	52			42%	NA	78	29.92	1013.1
14	13:56	SW 23 G 32	10.00	Mostly Cloudy and Breezy	SCT050 BKN080	75	53	76	65	46%	NA	NA	29.94	1013.8
14	12:56	SW 23 G 32	10.00	Mostly Cloudy and Breezy	SCT050 BKN060 BKN150	74	54			50%	NA	NA	29.96	1014.6
14	11:56	SW 16 G 30	10.00	Mostly Cloudy	BKN039 BKN049 BKN150	72	55			55%	NA	NA	29.99	1015.7
14	10:56	SW 16 G 26	10.00	Overcast	BKN034 BKN043 OVC050	71	56			59%	NA	NA	30.00	1015.9
14	09:56	SW 18 G 28	10.00	Overcast	OVC031	68	57			68%	NA	NA	30.00	1016.1
14	08:56	SW 18 G 24	10.00	Mostly Cloudy	BKN025 BKN150	67	57			71%	NA	NA	30.00	1015.8
14	07:56	SW 16	10.00	Mostly Cloudy	SCT120 BKN250	65	56	68	63	73%	NA	NA	30.00	1016.0
14	06:56	SW 15	10.00	Fair	CLR	64	55			73%	NA	NA	30.00	1015.9
14	05:56	SW 13	10.00	Fair	CLR	65	55			70%	NA	NA	29.99	1015.6
14	04:56	SW 15	10.00	Fair	CLR	66	54			65%	NA	NA	30.00	1016.0
14	03:56	SW 16	10.00	Fair	CLR	66	54			65%	NA	NA	30.00	1016.0
14	02:56	S 15	10.00	Fair	CLR	66	55			68%	NA	NA	30.01	1016.1
14	01:56	S 13	10.00	Fair	CLR	66	56	72	64	70%	NA	NA	30.02	1016.5
14	00:56	S 16	10.00	Fair	CLR	64	56			75%	NA	NA	30.03	1016.8
13	23:56	S 12	10.00	Fair	CLR	64	56			75%	NA	NA	30.02	1016.7
13	22:56	SW 9	10.00	Fair	CLR	66	56			70%	NA	NA	30.02	1016.6
13	21:56	SW 12	10.00	Fair	CLR	67	56			68%	NA	NA	30.03	1016.8
13	20:56	S 12	10.00	Fair	CLR	66	56			70%	NA	NA	30.01	1016.4
13	19:56	SW 13	10.00	Fair	CLR	72	56	82	71	57%	NA	NA	30.01	1016.3
13	18:56	SW 20	10.00	Fair	CLR	75	54			48%	NA	NA	30.00	1016.1
13	17:56	S 17	10.00	Fair	CLR	71	55			57%	NA	NA	30.01	1016.2
13	16:56	S 17	10.00	Fair	CLR	75	55			50%	NA	NA	30.00	1016.1
13	15:56	S 18	10.00	Fair	CLR	74	55			52%	NA	NA	30.01	1016.4
13	14:56	S 20	10.00	Fair	CLR	74	55			52%	NA	NA	30.03	1017.0

13	13:56	SW 16 G 26	10.00	Fair	CLR	81	51	81	56	35%	NA	80	30.06	1018.1				
13	12:56	S 10	10.00	Fair	CLR	70	56			61%	NA	NA	30.09	1018.9				
13	11:56	S 16	10.00	Fair	CLR	68	56			65%	NA	NA	30.12	1020.0				
Date	Time (edt)	Wind (mph)	Vis. (mi.)	Weather	Sky Cond.	Air	Dwpt	Max.	Min.	Relative Humidity	Wind Chill (°F)	Heat Index (°F)	altimeter (in.)	sea level (mb)	1 hr	3 hr	6 hr	
						Temperature (°F)		6 hour					Pressure		Precipitation (in.)			

National Weather Service
Southern Region Headquarters
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Information to Supplement June 30, 2014 Form 2F-ATTACHMENT A

The following information is provided as a supplement to ATTACHMENT A of our June 30, 2014 application and provides additional information relative to the decant structure associated with Ponds ABC at our Possum Point Power Station.

Decant Structure Description

Construction details for the Possum Point Power Station Ash Pond ABC decant structure are provided in the attached March 24, 1954 drawings. The decant structure is a concrete riser with internal dimensions of approximately 4 ft. by 4 ft. by 18-ft. high. The upstream side of the structure has a slot in which individual concrete members are placed one on top of the other to form a wall. These members are commonly referred to as stoplogs. The stoplogs are each approximately 12-inches high, 8-inches deep and 4 ft. - 6 inches long. The stoplogs extend from about 6 inches below the top of the structure to 14 ft. – 6 inches below the top of the structure (42 inches above the bottom of the structure). The outlet from the riser is a 30-inch diameter concrete pipe with the invert elevation about 1 ft. above the bottom of the structure. The top of structure elevation is approximately equal to the top of the earth dam. For safety purposes the top of the structure is fitted with a galvanized metal grating (this may be a source of zinc to the water).

Observations Related to Inflow to the Decant Structure

Since submittal of our June 30, 2014 application, Dominion has continued to perform weekly inspections of Ponds ABC and the associated decant structure. The inspections have been timed to coincide with storm events as they have been observed to occur throughout the period. During each inspection observations have included the depth of water pooled behind the decant structure, a description of the amount of water that was entering the decant structure, and the amount of rainfall that occurred prior to each inspection. Throughout the period of inspection water that was observed to enter the structure did so at an elevation at or above that of the pond surface. A summary of the information generated during the inspections is presented in Figure 1. A review of the observations indicates the following:

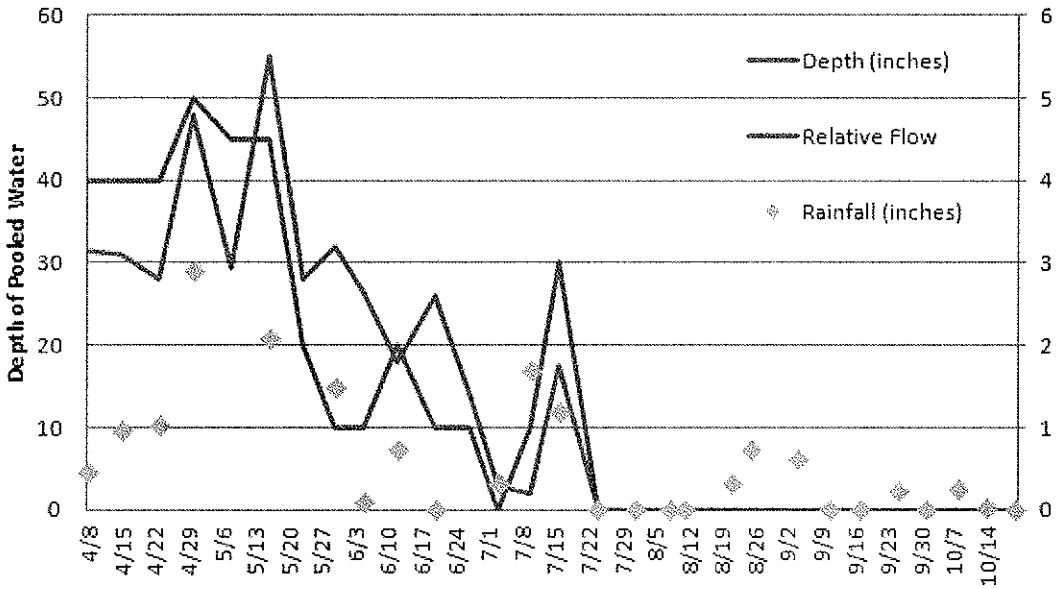
- The amount of water entering the decant structure has been directly related to the amount of precipitation prior to each inspection.
- During wetter periods (i.e., April – May) some flow into the decant structure was consistently observed; however, the amount of pooled water behind the structure (28 – 55 inches) and the degree of flow into the structure (e.g., no change, small flow, significant increase) varied in relation to the amount of rainfall that occurred between individual inspection events. It should be noted that the inspections were timed to correspond with precipitation events (i.e., periods when the in-flow to the structure would have been expected to increase) so the true change in pooled water elevation and the degree of flow between inspections could have been much more and less, respectively, than what was observed.
- During drier periods (i.e., June – November 17) no flow was observed entering the structure.
- As noted in the decant structure description above, there is some difference in elevation between the bottom of the discharge structure and the bottom elevation of the concrete discharge pipe (i.e., there is always some standing water in the bottom of the decant structure).

Implications for Permitting

Based on discussions with DEQ staff and a review of preliminary permitting documents, Dominion understands that DEQ is considering permitting the discharge from Ponds ABC as a continuous discharge and, as such, is considering applying the same 2:1 chronic assimilative capacity approach that was applied to the Possum Point Power Station process wastewater discharges. Dominion does not believe that this approach is appropriate given the storm water nature of the ABC pond discharge. Even so, we had our consultant LimnoTech perform screening level modeling to evaluate the chronic mixing that would be

anticipated for such a discharge (see attached). The results of this analysis demonstrate that an assimilative capacity of considerably greater than 2:1 is appropriate for application of Virginia's chronic water quality criteria to the discharge from the Pond ABC decant structure. As such, we recommend that should DEQ continue with their water quality-based effluent limits approach that the evaluation be based on the acute water quality criteria, which we believe are the limiting criteria in this situation.

Figure 1. Weekly Inspection Observations: Depth of Water Pooled Behind the Decant Structure, Relative Flow of Pooled Water into Discharge Structure, and Amount of Rainfall Prior to Inspection



The actual flow into the decant structure was not determined during the weekly inspections. However, descriptive information was provided on each report and has been used to provide an indication of the relative amount of flow that was entering the structure on any given day.

Permitting of discharge associated with Ash Pond C: Chronological history

1991 - VPDES permit reissued with effective date May 8. Permit and Fact Sheet do not contain any reference to Ponds A, B, & C. Stormwater requirements not included in individual permit.

1996 - VPDES Storm Water General Permit (Permit No. VAR330109) issued with date of coverage March 12, 1996. Permit contained Part I. pages for "coal" and "oil" handling sites at steam electric generating facilities (other than coal pile runoff), with associated effluent monitoring requirements. The permit also contained a requirement to develop a storm water pollution prevention plan.

1996 - Storm Water Pollution Prevention Plan dated March 14, 1996 contains the following description of storm water Outfall S104. The plan clearly identifies the location of the old ponds but concludes no potential for contaminants due to nature of drainage area that time.

VA# S104

Outfall and Drop Inlets (pipes) and [manholes]: VA# S104 < (103) (102)

Outfall Location: Latitude 38° 32' 34", Longitude 77° 16' 45"

Description: Outfall VA# S104 is a 30" concrete pipe which is integral to an inactive decant structure that previously served Ash Ponds A, B, and C. The drainage area associated with VA# S104 is approximately 43.8 acres with 50% cleared, 10%, highway, 25% medium woods, and 15% brush. Three drainage areas contribute runoff to this outfall:

1. A small drainage area (two acres) located on the northwest side of the intersection of Possum Point Road and Cockpit Point Road contributes runoff to VA# S104 via pipe #102. This area consists of 5% cleared, 30% highway, and 65% medium woods.

2. Approximately 16.9 acres just northwest of area 1 above, and bounded to the southwest by Possum Point Road, contributes runoff to VA# S104 via pipe #103. This area contains approximately 5% cleared, 5% highway, 35% brush, and 55% medium woods.

3. Approximately 25 acres (43.8 acres total minus 16.9 acres #103 and 2 acres #102) located west of drainage areas 1 and 2 above across Possum Point Road. It is within this drainage area that the old Ash Ponds A, B, and C were located.

Potential Contaminants: None

1996 - VPDES permit reissued with an effective date of August 9, 1996. Permit does not contain specific reference to ponds A, B, C, but does include requirement for development of SWPPP.

2001 - Reissued VPDES Permit reissued effective date September 13. Previous permit had required development of a storm water pollution prevention plan. This permit also contained a condition (G. Storm Water Management) requiring that the SWPPP be updated.

2004 - VPDES permit modified to incorporate wastewater discharges associated with the new Unit 6.

2006 – Application for renewal of Possum Point's discharge permit submitted March 2006. The application includes a description of Outfall S104 and associated drainage area that is essentially identical to the one from 1996 SWPPP above.

2007 - VPDES permit reissued effective October 24, 2007. There is no specific reference to Outfall 104 in the permit; however, Table 3 of the Fact Sheet developed by DEQ to support the permit contains a list of stormwater outfalls and drainage area descriptions that include S104.

2008 – Possum Point's Stormwater Pollution Prevention Plan (SWPP) was updated and Outfall S104 no longer specifically recognized in the plan. The drainage areas contributing to S104 are shown as sheet flow. **NOTE: This was likely done given the status of ponds A, B, and C at that time and previous determinations concerning the lack of potential for pollutants to be present in the discharge.**

2012 - Application for reissuance of Possum Point's VPDES permit submitted April 5. Form 2F lists 15 stormwater discharges from Possum Point. S104 is not included on the list. The application includes the Stormwater Pollution Prevention Plan (SWPPP), which had been updated in 2011 and continued to show the drainage area associated with ponds A, B, & C as sheet flow. The list of Outfalls in the SWPPP is identical to the list in Form 2F and does not include S104.

2013 - Possum Point's VPDES permit is reissued and does not specifically recognize the discharge from Pond C.

Dominion Resources Services, Inc.
5000 Dominion Boulevard, Glen Allen, VA 23060
Web Address: www.dom.com

Dominion

BY U.S. MAIL
RETURN RECEIPT REQUESTED

December 22, 2014

Ms. Susan Mackert
Department of Environmental Quality
Northern Regional Office
13901 Crown Court
Woodbridge, VA 22193

RE: Dominion Possum Point Power Station VPDES Permit No. VA0002071
Permit Modification Request-Addendum

Dear Ms. Mackert:

Virginia Electric & Power Company d/b/a Dominion Virginia Power (Dominion) is submitting the enclosed addendum to our June 30, 2014 request to modify the subject permit. Our addendum includes an application Form 2F for coverage of a number of new industrial storm water outfalls including: Outfall S35 that receives runoff from a small area at the north end of the Unit 5 cooling tower, Outfall S105 that receives runoff from the area between the railroad and the embankment of Pond A, and two new proposed stormwater outfalls S108 and S109, which will drain the toe of the dam areas south and west of Pond E respectively. We are also requesting that permit condition I.A.12 be modified to recognize that industrially influenced storm water may be discharged through existing storm water outfall S107. In addition, we are providing information to supplement Attachment A of the Form 2F that was submitted with our earlier application, and we are also including proposed changes to a number of permit conditions for clarification.

Should you have any questions and/or require additional information, please contact Oula Shehab-Dandan at 804-273-2697 or via email at oula.k.shehab-dandan@dom.com.

Sincerely,

Cathy C. Taylor
Director, Electric Environmental Services

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

NAME: Edward H. Baine

OFFICIAL TITLE: V.P. Power Generation System Operations

PHONE NO: (804) 273-3592

SIGNATURE: Edward H. Baine

DATE SIGNED: 12/22/14

ebc:
Ed Baine
Pamela Faggert
Cathy Taylor
Jeffrey Heffelman
Jeff Marcell
Ken Roller
Keith Homza
Rick Woolard
Oula Shehab-Dandan

Please upload to Documentum with the following metadata:

Document type = Permit – Applications;
Environmental Program = Water – NDPES;
Facility Name = Possum Point
File Name = PP VA0002071 VPDES Permit Modification Request-Addendum

Please print or type in the unshaded areas	EPA ID Number *(copy from item 1 of Form 1)* 110000340774	Form Approved. OMB No. 2040-0086

Form 2F NPDES

EPA

United States Environmental Protection Agency
Washington, DC 20460

Application for Permit to Discharge Storm Water Discharges Associated with Industrial Activity

Paperwork Reduction Act Notice

Public reporting burden for this application is estimated to average 28.6 hours per application, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate, any other aspect of this collection of information or suggestions for improving this form, including suggestions which may increase or reduce this burden to: Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 401 M St., SW, Washington, DC 20460, or Director, Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

I. Outfall Location

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. Outfall Number *(list)*	B. Latitude			C. Longitude			D. Receiving Water *(name)*
S035	38	32	10	77	16	46	Potomac River
S105	38	32	28.53	77	17	2.05	Quantico Creek
S107	38	32	43.8	77	16	37	Quantico Creek
S108	38	32	59.25	77	17	36.52	Unnamed Tributary to Quantico Creek
S109	38	33	11.32	77	17	36.13	Unnamed Tributary to Quantico Creek

II. Improvements

A. Are you now required by any Federal, State, or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

1. Identification of Conditions, Agreements, Etc.	2. Affected Outfalls		3. Brief Description of Project	4. Final Compliance Date	
	number	source of discharge		a. req.	b. proj.
Not Applicable					

B. You may attach additional sheets describing any additional water pollution (or other environmental projects which may affect your discharges) you now have under way or which you plan. Indicate whether each program is now under way or planned, and indicate your actual or planned schedules for construction.

III. Site Drainage Map

Attach a site map showing topography (or indicating the outline of drainage areas served by the outfall(s) covered in the application if a topographic map is unavailable) depicting the facility including: each of its intake and discharge structures; the drainage area of each storm water outfall; paved areas and buildings within the drainage area of each storm water outfall, each known past or present areas used for outdoor storage or disposal of significant materials, each existing structure control measure to reduce pollutants in storm water runoff, materials loading and access areas, areas where pesticides, herbicides, soil conditioners and fertilizers are applied; each of its hazardous waste treatment, storage or disposal units (including each are not required to have a RCRA permit which is used for accumulating hazardous waste under 40 CFR 262.34); each well where fluids from the facility are injected underground; springs, and other surface water bodies which receive storm water discharges from the facility.

Continued on Page 2

Continued from the Front

IV. Narrative Description of Pollutant Sources

A. For each outfall, provide an estimate of the area (include units) of impervious surfaces (including paved areas and building roofs) drained to the outfall, and an estimate of the total surface area drained by the outfall.

Outfall Number	Area of Impervious Surface (provide units)	Total Area Drained (provide units)	Outfall Number	Area of Impervious Surface (provide units)	Total Area Drained (provide units)
S35	0.135 acre	0.15 acre			
S105	2.4 acres	34.9 acres			
S107	0 acres	14.4 acres			
S108	0 acres	1.8 acre			
S109	0 acres	0.5 acre			

B. Provide a narrative description of significant materials that are currently or in the past three years have been treated, stored or disposed in a manner to allow exposure to storm water; method of treatment, storage, or disposal; past and present materials management practices employed to minimize contact by these materials with storm water runoff; materials loading and access areas; and the location, manner, and frequency in which pesticides, herbicides, soil conditioners, and fertilizers are applied.

The drainage area associated with Outfall S35 receives runoff from the north end of Unit #5 Cooling Tower B and drains approximately 0.15 acres consisting of approximately 90% impervious (building, roads) and 10% pervious (grass, gravel) surfaces. The drainage area is similar in nature to that associated with existing Outfall S5, and consequently, Dominion requests that Outfall S5 to be considered representative of Outfall S35. Intake structure maintenance activities may occur in the drainage area.

The drainage area associated with Outfall S105 originates from an area located on the east side of the railroad tracks and just west of the station's laydown area (see attached Site Plan). The drainage area consists of approximately 93% pervious and 7% impervious surfaces. Runoff contributing to Outfall S105 flows westward through culverts under the railroad and Possum Point Road, enters a drainage channel located to the south of the inactive Ash Pond A, and is eventually discharged to Quantico Creek.

Outfall S107 collects storm water from the berm of Ash Pond D via two drop inlets which is discharged to Quantico Creek southeast of Pond D. This outfall is designed to collect groundwater infiltration from the ash pond's berm for stabilization. The area is approximately 14.4 acres and estimated to be 100% pervious (grass, vegetative slopes).

In 2012, Dominion cleared the trees and brush from within 25 feet of the limits of the Ash Pond E embankment as required by Virginia Impounding Structure Regulations. As a result of this clearing, Dominion observed two areas along the downstream toe of the south embankment and west embankment that had poor surface drainage characteristics. Standing water is present in these areas during the wetter months of the year. Consequently, Dominion is undertaking a project to improve the surface drainage at the downstream toe portions of the south and west embankments of Ash Pond E by constructing grass-lined ditches. It is expected that the project will be completed during the first quarter of 2015. Outfalls S108 and S109 are proposed storm water outfalls originating from the south and west drainage areas, respectively. The drainage areas associated with theses outfalls are considered to be 100% pervious and will receive runoff from the areas south and west of Pond E, respectively. They are expected to be constructed in the first quarter of 2015. The drainage areas consist of 100% pervious surfaces.

The drainage areas for Outfalls S105, S107, S108, and S109 are located in close proximity to the station's ash ponds. The Possum Point Power Station does not currently generate coal ash, and none of the existing ponds has received ash for at least 10 years. Even so, out of an abundance of caution, given the location of these drainage areas Dominion is requesting that the associated discharges be permitted as storm water outfalls associated with industrial activity.

C. For each outfall, provide the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff, and a description of the treatment the storm water receives, including the schedule and type of maintenance for control and treatment measures and the ultimate disposal of any solid or fluid wastes other than by discharge.

Outfall Number	Treatment	List Codes from Table 2F-1
S35 S105 S107 S108 S109	Discharge to Surface Water	4-A

Continued on Page 3

V. Non Stormwater Discharges

A. I certify under penalty of law that the outfall(s) covered by this application have been tested or evaluated for the presence of nonstormwater discharges, and that all nonstormwater discharges from these outfall(s) are identified in either an accompanying Form 2C or Form 2E application for the outfall.

Name of Official Title *(type or print)*	Signature	Date Signed
Edward H. Baine VP Power Generation System Operations	Edward H. Baine	12/22/14

B. provide a description of the method used, the date of any testing, and the onsite drainage points that were directly observed during a test.

Outfall S035 was visually inspected on 11/12/ 2014 during dry weather and no discharge was observed.

Outfall S105 – the drainage channel for this outfall was visually inspected on November 3, 2014 during dry weather and no flow was observed.

Outfall S107- there is a continuous discharge from this outfall due to groundwater contribution.

Oufall S108 & S109 – the improvements leading to the creation of these outfalls have yet to be realized. These outfalls will be inspected for non-storm water flows once they exist.

VI. Significant Leaks or Spills

Provide existing information regarding the history of significant leaks or spills of toxic or hazardous pollutants at the facility in the last three years, including the approximate date and location of the spill or leak, and the type and amount of material released.

No spills or leaks of toxic or hazardous pollutants have occurred within the last three years within the drainage areas associated with S35, S105, S107, S108, and S109.

Continued on Page 3

Continued from Page 2

EPA ID Number *(copy from Item 1 of Form 1)*
110000340774

VII. Discharge Information

A,B,C, & D: See instruction before proceeding. Complete one set of tables for each outfall. Annotate the outfall number in the space provided. Tables VII-A, VII-B, and VII-C are included on separate sheets numbered VII-1 and VII-2.

E. Potential discharges not covered by analysis - is any toxic pollutant listed in table 2F-2, 2F-3, or 2F-4, a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ Yes *(list all such pollutants below)* ☒ No *(go to Section IX)*

VIII. Biological Toxicity Testing Data

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☐ Yes *(list all such pollutants below)* ☒ No *(go to Section IX)*

--

IX. Contact analysis Information

Were any of the analysis reported in item VII performed by a contact laboratory or consulting firm?

☐ Yes *(list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)* ☒ No *(go to Section X)*

A. Name	B. Address	C. Area Code & Phone No.	D. Pollutants Analyzed

X. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name & Official Title *(type or print)*	B. Area Code and Phone No.
Edward H. Baine VP Power Generation System Operations	(804) 273-3592
C. Signature: Edward H. Baine	D. Date Signed: 12/22/14

Continued on Page 3

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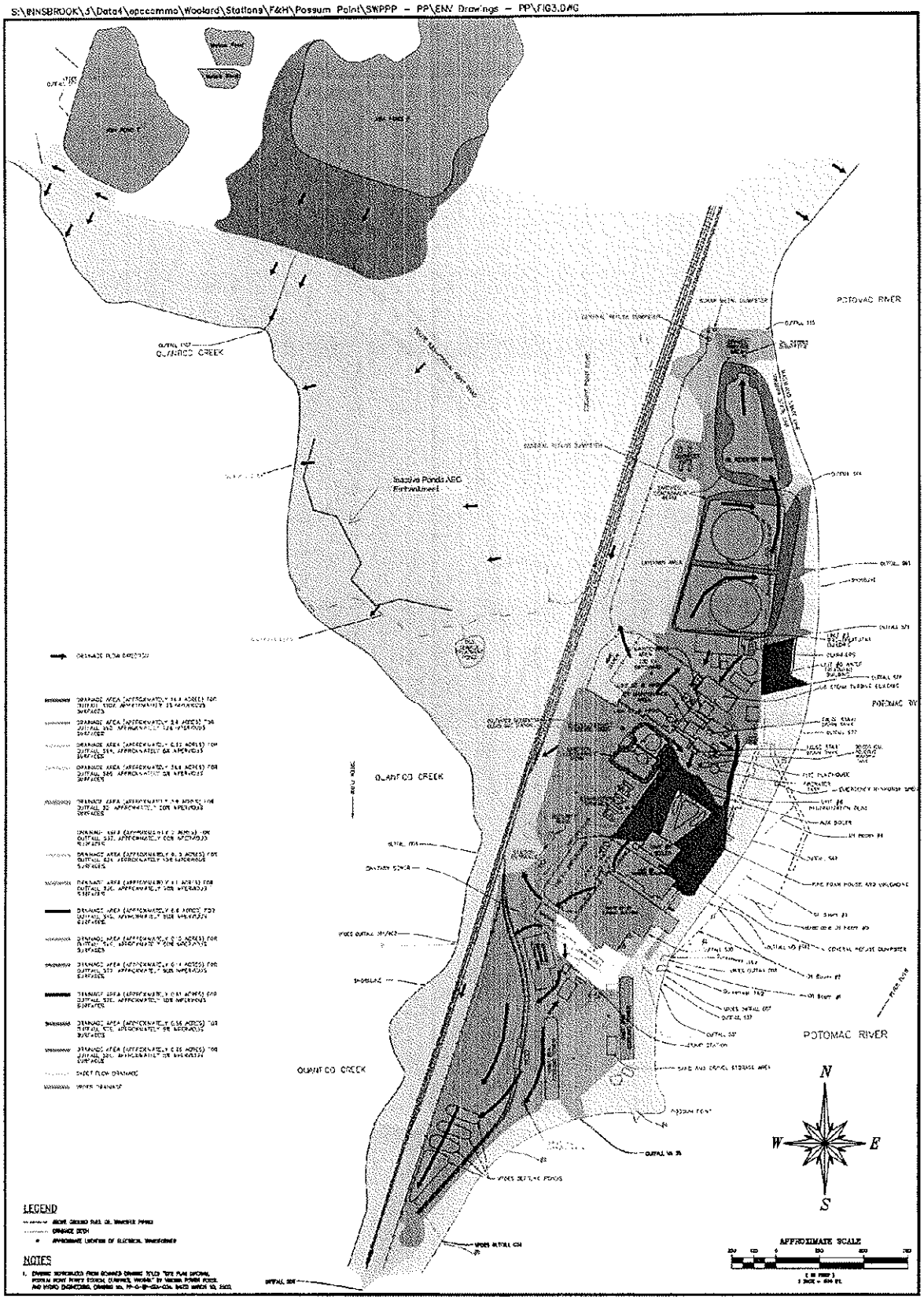


DOMINION ENERGY

SITE PLAN
DRAINAGE AREA
POSSUM POINT POWER STATIO

		0	ORIGINAL ISSUE		
				DESIGN	DESIGN SUPERVISOR
				DRAWN TTT	ENGR SUPV
					DRAWING NUMBER
					PP-0-SP-STA

Information to Supplement June 30, 2014 Form 2F-ATTACHMENT A

The following information is provided as a supplement to ATTACHMENT A of our June 30, 2014 application and provides additional information relative to the decant structure associated with Ponds ABC at our Possum Point Power Station.

Decant Structure Description

Construction details for the Possum Point Power Station Ash Pond ABC decant structure are provided in the attached March 24, 1954 drawings. The decant structure is a concrete riser with internal dimensions of approximately 4 ft. by 4 ft. by 18-ft. high. The upstream side of the structure has a slot in which individual concrete members are placed one on top of the other to form a wall. These members are commonly referred to as stoplogs. The stoplogs are each approximately 12-inches high, 8-inches deep and 4 ft. - 6 inches long. The stoplogs extend from about 6 inches below the top of the structure to 14 ft. – 6 inches below the top of the structure (42 inches above the bottom of the structure). The outlet from the riser is a 30-inch diameter concrete pipe with the invert elevation about 1 ft. above the bottom of the structure. The top of structure elevation is approximately equal to the top of the earth dam. For safety purposes the top of the structure is fitted with a galvanized metal grating (this may be a source of zinc to the water).

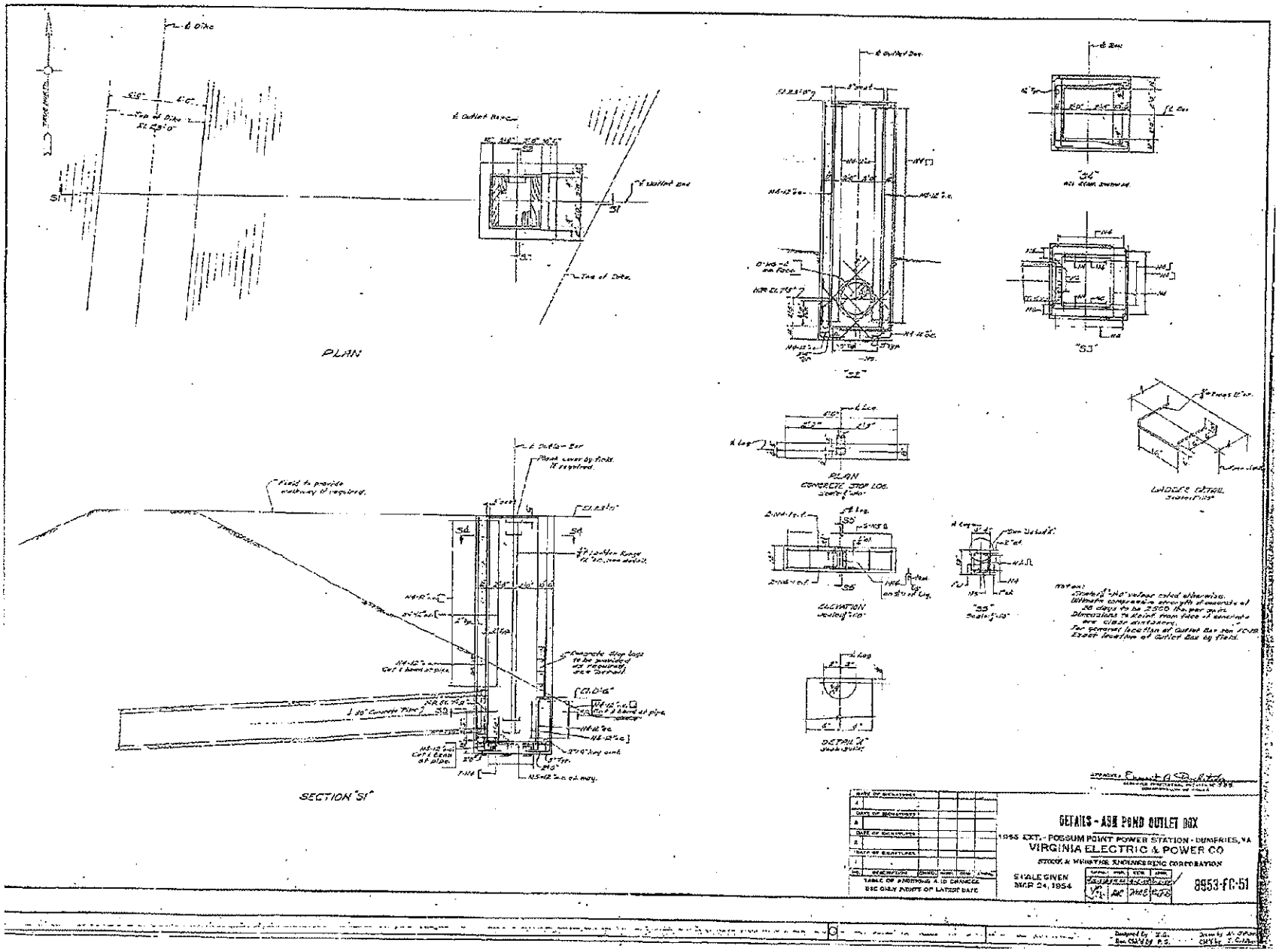
Observations Related to Inflow to the Decant Structure

Since submittal of our June 30, 2014 application, Dominion has continued to perform weekly inspections of Ponds ABC and the associated decant structure. The inspections have been timed to coincide with storm events as they have been observed to occur throughout the period. During each inspection observations have included the depth of water pooled behind the decant structure, a description of the amount of water that was entering the decant structure, and the amount of rainfall that occurred prior to each inspection. Throughout the period of inspection water that was observed to enter the structure did so at an elevation at or above that of the pond surface. A summary of the information generated during the inspections is presented in Figure 1. A review of the observations indicates the following:

- The amount of water entering the decant structure has been directly related to the amount of precipitation prior to each inspection.
- During wetter periods (i.e., April – May) some flow into the decant structure was consistently observed; however, the amount of pooled water behind the structure (28 – 55 inches) and the degree of flow into the structure (e.g., no change, small flow, significant increase) varied in relation to the amount of rainfall that occurred between individual inspection events. It should be noted that the inspections were timed to correspond with precipitation events (i.e., periods when the in-flow to the structure would have been expected to increase) so the true change in pooled water elevation and the degree of flow between inspections could have been much more and less, respectively, than what was observed.
- During drier periods (i.e., June – November 17) no flow was observed entering the structure.
- As noted in the decant structure description above, there is some difference in elevation between the bottom of the discharge structure and the bottom elevation of the concrete discharge pipe (i.e., there is always some standing water in the bottom of the decant structure).

Implications for Permitting

Based on discussions with DEQ staff and a review of preliminary permitting documents, Dominion understands that DEQ is considering permitting the discharge from Ponds ABC as a continuous discharge and, as such, is considering applying the same 2:1 chronic assimilative capacity approach that was applied to the Possum Point Power Station process wastewater discharges. Dominion does not believe that this approach is appropriate given the storm water nature of the ABC pond discharge. Even so, we had our consultant LimnoTech perform screening level modeling to evaluate the chronic mixing that would be


PLAN
SECTION "S1"
"S2"
"S3"
"S4"
"S5"
DETAIL "X"
PLAN
CONCRETE STOP LOG
ELEVATION
WADDLE DETAIL
DETAILS - ASH POND OUTLET BOX
1955 EXT. - POSSUM POINT POWER STATION - DUMFRIES, VA
VIRGINIA ELECTRIC & POWER CO
STONE & WEBSTER ENGINEERING CORPORATION
SCALE GIVEN
SEPT 24, 1954
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LimnoTech
Water Environment | Scientists Engineers

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Memorandum

From: Virginia Breidenbach, PE
Dave Dilks, PhD
To: Dominion Environmental Services

Date: December 10, 2014
Project: TSDOM

SUBJECT: **Screening Level Dilution Evaluation for Pond C Discharge to Quantico Creek**

Summary

This memorandum presents a screening level evaluation of dilution for the Pond C decant structure discharge to Quantico Creek under chronic toxicity conditions.

The results of this assessment indicate that for chronic toxicity, dilution factors greater than two are likely achieved for Pond C discharge flow rates up to approximately 270 gpm.

A description of the Pond C decant structure discharge, approach to the dilution evaluation, assumptions and data inputs, and evaluation results are discussed below.

Discharge Description

The Pond C outfall is located on the northeast bank of Quantico Creek within the Virginia Electric and Power Company Possum Point Power Station. The discharge consists of a 30" concrete pipe leading from the decant structure at Pond C. The pipe outfall is located approximately 20 feet from the creek bank. A small channel leads from the outfall to the creek. The outfall does not appear to be submerged.

The only recorded flow rate available for the discharge is an estimate of 2 gpm made from visual observation by a VDEQ staff person on a field visit conducted on April 11, 2014 (Demers and Mackert, April 15, 2014). No flow was observed from the outfall on site visits made by LimnoTech staff on November 3, 5, and 6, 2014.

Approach

The approach used to determine chronic toxicity dilution factors for the Pond C decant structure outfall was patterned after the most commonly used approach for assessing chronic mixing zones in rivers. The approach allows a fraction of the total available flow to be used for dilution, with this fraction being set equal to the fraction of the water body's cross-sectional area allotted to the chronic mixing zone. For Quantico Creek, this fraction of total available flow to be used for dilution was assumed to be the more stringent case specified in Virginia rules for estuarine and transition zone waters as no more than "five times in any direction the average depth along a line extending 1/3 of the way across the receiving water from the discharge point to the opposite shore" (9VAC25-260-20). Because Quantico Creek is tidally influenced, it is appropriate to use

the total dilution flow available over a tidal cycle (rather than just the upstream freshwater flow). The chronic toxicity dilution factor equation therefore becomes:

$$S = (Q_w + Q_{dil})/ Q_w \quad (1)$$

Where,

S = dilution factor

Q_w = wastewater flow from Pond C

Q_{dil} = total dilution flow

Total dilution flow is calculated as:

$$Q_{dil} = a\,(Q_{up} + Q_{TID}) \quad (2)$$

Where,

a = fraction of total available flow to be used for dilution

Q_{up} = upstream Quantico Creek flow from stream gage data

Q_{TID} = tidal flow

The fraction of total available flow to be used for dilution calculated as:

a = (5 * local water depth) / (width of embayment) (3)

Tidal flow is calculated as:

Q_{TID} = (average change in water depth over a tidal cycle) * (4)
(embayment surface area)/12.5 hours

The dilution factor is adjusted to account for the fraction of wastewater flow that is returned within the tidal cycle, thus limiting available mixing. The resulting effective dilution factor is calculated as:

$$S_{effective} = S * (1 - r_c) \quad (5)$$

Where,

r_c = return rate of mass discharged in the previous tidal cycle

In this instance, a return rate of 0.5 was selected as a highly conservative estimate based on U.S. EPA guidance (U.S. EPA 1992) that states:

> "the r_c factor can be expected to vary in the range of $\leq$0.1 to $\approx$0.5 (highly conservative estimate). It is very small ($\leq$0.1) for deep water discharges in the open coastal zone that are often associated with internal trapping of buoyant surface layer formation....It may be reasonably high (up to 0.5) for shallow

> water, vertically mixed discharges to strongly restricted estuaries with weak flushing."

It is emphasized that this approach is a screening level estimation and not a rigorous assessment. Virginia regulations specify mixing zone dimensions that extend upstream, downstream, and across-stream from the point of discharge. Experience has shown that this approach provides a conservative estimate of dilution when assessing the across-stream mixing zone boundary. It is not as clear how protective this approach is of the up- or downstream boundary. It is worth noting that the approach above was accepted by U.S. EPA Region III for developing NPDES permits for the District of Columbia's Blue Plains Wastewater Treatment Plant discharge to the Potomac River.

It should also be noted that the VPDES Permit Manual (VDEQ, 2014) states that for storm water discharges and intermittent discharges (< 4 days duration), water quality-based effluent limitations can be established using acute toxicity only.

Data Inputs and Assumptions

The data and assumptions used to calculate chronic toxicity dilution factors for the Pond C decant structure discharge are given in Table 1.

Table 1: Data Inputs with Sources for Chronic Toxicity Dilution Calculations

Parameter	Value	Units	Source
Surface area of Quantico Creek embayment	31,210,000	ft^2	GIS from aerial photo
Average change in water depth over tidal cycle	1.5	ft	NOAA chart dated August 2013 (http://www.charts.noaa.gov/OnLineViewer/12288.shtml)
Average water depth in vicinity of discharge at MLLW	1	ft	NOAA chart dated Aug 2013 (http://www.charts.noaa.gov/OnLineViewer/12288.shtml)
Embayment width at outfall location	2,800	ft	GIS from aerial photo
Q_{up} (S.F. Quantico Creek)	0.004	cfs	7Q10 streamflow for 1951-2003 SF Quantico Creek (USGS 01658500) reported by VDEQ (www.deq.state.va.us/Portals/0/.../Virginia_Stream_Flow_Data_2005.xls)
Drainage area (DA) at gage	7.62	mi^2	USGS 01658500 (http://waterdata.usgs.gov/va/nwis/inventory/?site_no=01658500&agency_cd=USGS)
Drainage area at Quantico Creek pour point	30.8	mi^2	GIS from digital elevation model
DA ratio	4.0		Calculated
Q_{up}	0.016	cfs	DA ratio * Q_{up}(S.F. Quantico Creek)
Q_w	2	gpm	VDEQ staff 4-16-14 site visit memo
r_c	0.5		Conservative value from U.S. EPA, 1992

Results

Estimated chronic toxicity dilution factors were calculated using the approach described above for a range of Pond C discharge flow rates, as indicated in Figure 1. As mentioned above, the only recorded flow rate for the outfall is 2 gpm, which was an estimate made via observation.

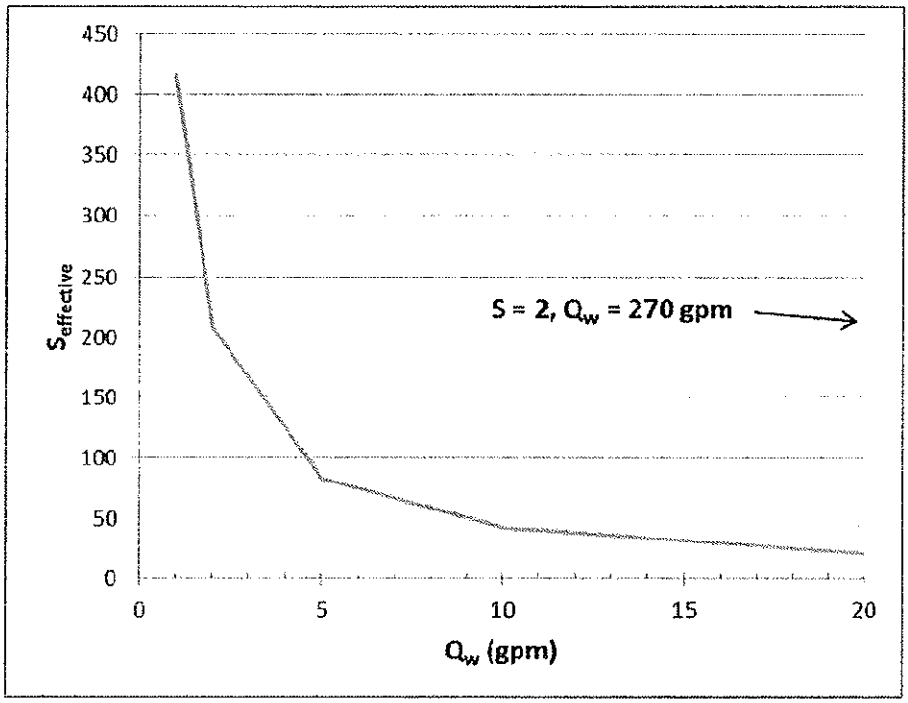


Figure 1: Chronic Toxicity Dilution Factors for Varying Pond C Decant Structure Discharge Rates

Dilution factors greater than two are estimated for discharge flow rates up to 270 gpm, while dilution factors greater than 50 are estimated for discharge flow rates up to approximately 8 gpm.

References

Commonwealth of Virginia Department of Environmental Quality Water Division (VDEQ). 2014. VPDES Permit Manual.

Demers, Dan and Susan Mackert to Tom Faha. Virginia Department of Environmental Quality Northern Regional Office. April 15, 2014. Updated April 16, 2014. Dominion – Possum Point Power Station VA0002071. [Memorandum]

United States Environmental Protection Agency Office of Water (U.S. EPA). 1992. Technical Guidance Manual for Performing Wasteload Allocations Book III: Estuaries, Part 3: Use Of Mixing Zone Models in Estuarine Waste Load Allocations. EPA-823-R-92-004.

Proposed Permit Modifications for Possum Point

I.F.1. Operation and Maintenance (O&M) Manual Requirement

The permittee shall maintain a current Operations and Maintenance (O&M) Manual for the facility and associated treatment infrastructure that is in accordance with Virginia Pollutant Discharge Elimination System Regulations, 9VAC25-31...

The O&M manual shall detail the practices and procedures which will be followed to ensure compliance with the requirements of this permit. This manual shall include, but not necessarily be limited to, the following items, as appropriate:

...

c. Discussion of Best Management Practices ("BMPs") including any that may be applicable to storage areas for fossil fuel combustion byproducts described in Part 1.F.3, ~~if applicable~~;

...

I.F.3. Materials Handling/Storage

Any and all product, materials, industrial wastes, and/or other wastes resulting from the purchase, sale, mining, extraction, transport, preparation, and/or storage of raw or intermediate materials, final product, by-product or wastes, shall be handled, disposed of, and/or stored in accordance with BMPs. For any active or inactive storage areas for fossil fuel combustion byproducts, these BMPs shall include, at a minimum, quarterly visual inspections of seeps or potential unanticipated releases such as leaks, spills, breaches or other releases. In the event that seeps are detected, then the permittee shall implement BMPs to minimize discharges of pollutants, if any, to surface waters. In the event that an unanticipated release is detected, then the permittee shall implement BMPs to minimize discharges of pollutants, if any, to surface waters and to implement corrective action to address the unanticipated release. All inspections and other BMPs that are implemented shall be documented and made available to DEQ upon request. No other

discharges of such product, materials, industrial wastes and/or other wastes to surface waters are permitted, ~~such a manner so as not to permit a discharge of such product, materials, industrial wastes, and/or other wastes to State waters,~~ except as expressly authorized.

Seek to replace I.F.10 (Debris Collection) with the analogous provision from the Chesterfield permit:

Discharge of Debris from Trash Racks
Debris collected on the intake trash racks shall not be returned to the waterway

II.R Disposal of Solids

Except in compliance with this permit, or another permit issued by the Board, s~~S~~olids, sludges or other pollutants removed in the course of treatment or management of pollutants shall be disposed of in a manner so as to prevent any pollutant from such materials from entering state waters.

I.A.12 Effluent Limitations and Monitoring Requirements (Stormwater)

Add S117 back into the permit.

Add Ponds A/B swale.

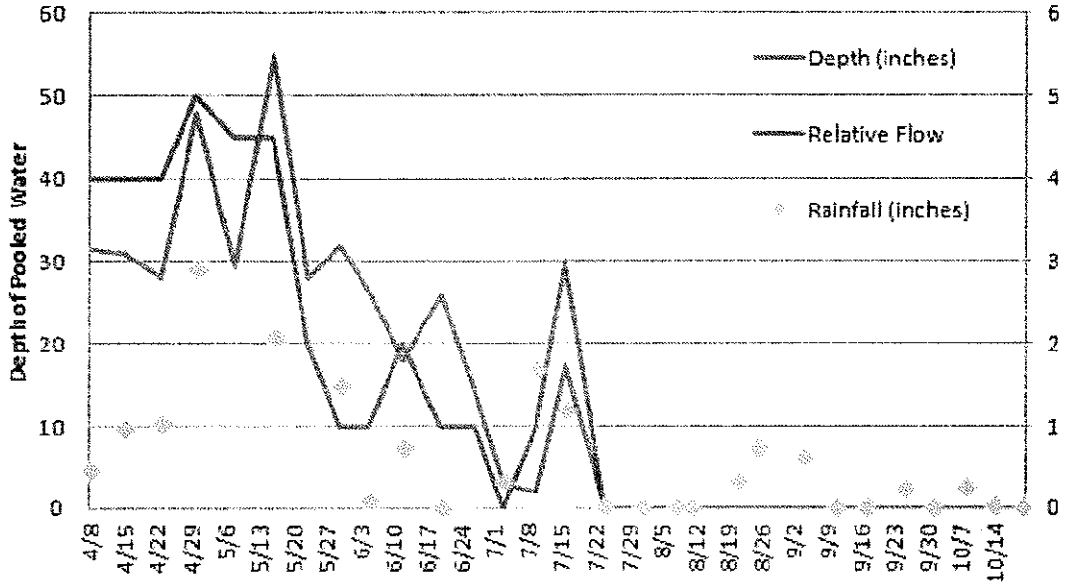
Redesignate S107 as industrial given potential for seepage.

I.D.3.a Site Characterization

Should data warrant, DEQ may require a Site Characterization Report for Ash Ponds A, B, C, D, E or the Oily Waste Treatment Basin...

anticipated for such a discharge (see attached). The results of this analysis demonstrate that an assimilative capacity of considerably greater than 2:1 is appropriate for application of Virginia's chronic water quality criteria to the discharge from the Pond ABC decant structure. As such, we recommend that should DEQ continue with their water quality-based effluent limits approach that the evaluation be based on the acute water quality criteria, which we believe are the limiting criteria in this situation.

Figure 1. Weekly Inspection Observations: Depth of Water Pooled Behind the Decant Structure, Relative Flow of Pooled Water into Discharge Structure, and Amount of Rainfall Prior to Inspection



The actual flow into the decant structure was not determined during the weekly inspections. However, descriptive information was provided on each report and has been used to provide an indication of the relative amount of flow that was entering the structure on any given day.

DOMINION LABORATORY SERVICES

REPORT PRODUCED ON 04/08/2014

ANALYSIS TEST RESULTS BY SAMPLE

Location: POSSUM POINT

Submitter: KEN ROLLER

Dominion Laboratory Number: 421572
Description : DISCHARGE
Unit: 0

Sample Date: 04/02/2014

Parameter	Result
Ammonia as N, PPM	0.04
Boron as B, PPM	0.08
Chloride as Cl, PPM	45.61
Fluoride as F, PPM	0.069
Sulfate as SO4, PPM	22.93
Silver as Ag, ppb	< 0.1
Dis. Ag, ppb	< 0.1
Arsenic as As, ppb	2.
Dis. As, ppb	< 2.
Barium as Ba, ppb	262.
Dis. Ba, ppb	204.
Beryllium as Be, ppb	< 0.2
Dis. Be, ppb	< 0.2
Cadmium as Cd, ppb	< 0.3
Dis. Cd, ppb	< 0.3
Cobalt as Co, ppb	2.0
Dis. Co, ppb	1.3
Copper as Cu, ppb	5.
Dis. Cu, ppb	4.
Chromium as Cr, ppb	1.
Dis. Cr, ppb	< 1.
Mercury as Hg, ppb	< 0.10
Dis. Hg, ppb	< 0.10
Molybdenum as Mo,ppb	3.
Dis. Mo, ppb	3.
Nickel as Ni, ppb	27.
Dis. Ni, ppb	21.
Lead as Pb, ppb	< 1.
Dis. Pb, ppb	< 1.
Antimony as Sb, ppb	1.
Dis. Sb, ppb	1.
Selenium as Se, ppb	4.
Dis. Se, ppb	4.
Thallium as Tl, ppb	0.4
Dis. Tl, ppb	< 0.3
Titanium as Ti, ppb	< 2.
Dis. Ti, ppb	< 2.
Tin as Sn, ppb	< 5.
Dis. Sn, ppb	< 5.
Magnesium as Mg, PPM	7.32
Dis. Mg, PPM	7.04
Manganese as Mn, PPM	0.04
Dis. Mn, PPM	< 0.02
Iron as Fe, PPM	0.77
Dis. Fe, PPM	0.11
Zinc as Zn, PPM	0.072
Dis. Zn, PPM	0.027
COD, PPM	17.80
TOC, PPM	8.2
TSS, PPM	3.4
Total Phos. as P,PPM	0.05
T-Dis. Solids, PPM	187.0
T-Hard. as CaCO3,PPM	59.85
TK Nitrogen as N,PPM	0.41
NO3+NO2, PPM	1.67
Phenol, PPM	< 0.01

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ANALYSIS TEST RESULTS BY SAMPLE

Location: POSSUM POINT

Submitter: KEN ROLLER

Dominion Laboratory Number: 421572
Description : DISCHARGE
Unit: 0

Sample Date: 04/02/2014

Parameter	Result
Aluminum as Al, ppb	253.
Dis. AL, PPB	74.
Vanadium as V, ppb	30.
Dis. V, ppb	25.

DOMINION LABORATORY SERVICES

REPORT PRODUCED ON 04/08/2014

ANALYSIS TEST RESULTS BY SAMPLE

Location: POSSUM POINT

Submitter: KEN ROLLER

Dominion Laboratory Number: 421573
Description : EQUIP BLK
Unit: 0

Sample Date: 04/02/2014

Parameter	Result
Dis. Ag, ppb	< 0.1
Dis. As, ppb	< 2.
Dis. Ba, ppb	< 3.
Dis. Be, ppb	< 0.2
Dis. Cd, ppb	< 0.3
Dis. Co, ppb	< 0.6
Dis. Cu, ppb	< 1.
Dis. Cr, ppb	< 1.
Dis. Hg, ppb	< 0.10
Dis. Mo, ppb	< 1.
Dis. Ni, ppb	< 5.
Dis. Pb, ppb	< 1.
Dis. Sb, ppb	< 1.
Dis. Se, ppb	< 2.
Dis. Tl, ppb	< 0.3
Dis. Ti, ppb	< 2.
Dis. Sn, ppb	< 5.
Dis. Mg, PPM	< 0.01
Dis. Mn, PPM	< 0.02
Dis. Fe, PPM	< 0.05
Dis. Zn, PPM	< 0.010
Dis. AL, PPB	< 1.
Dis. V, ppb	< 1.